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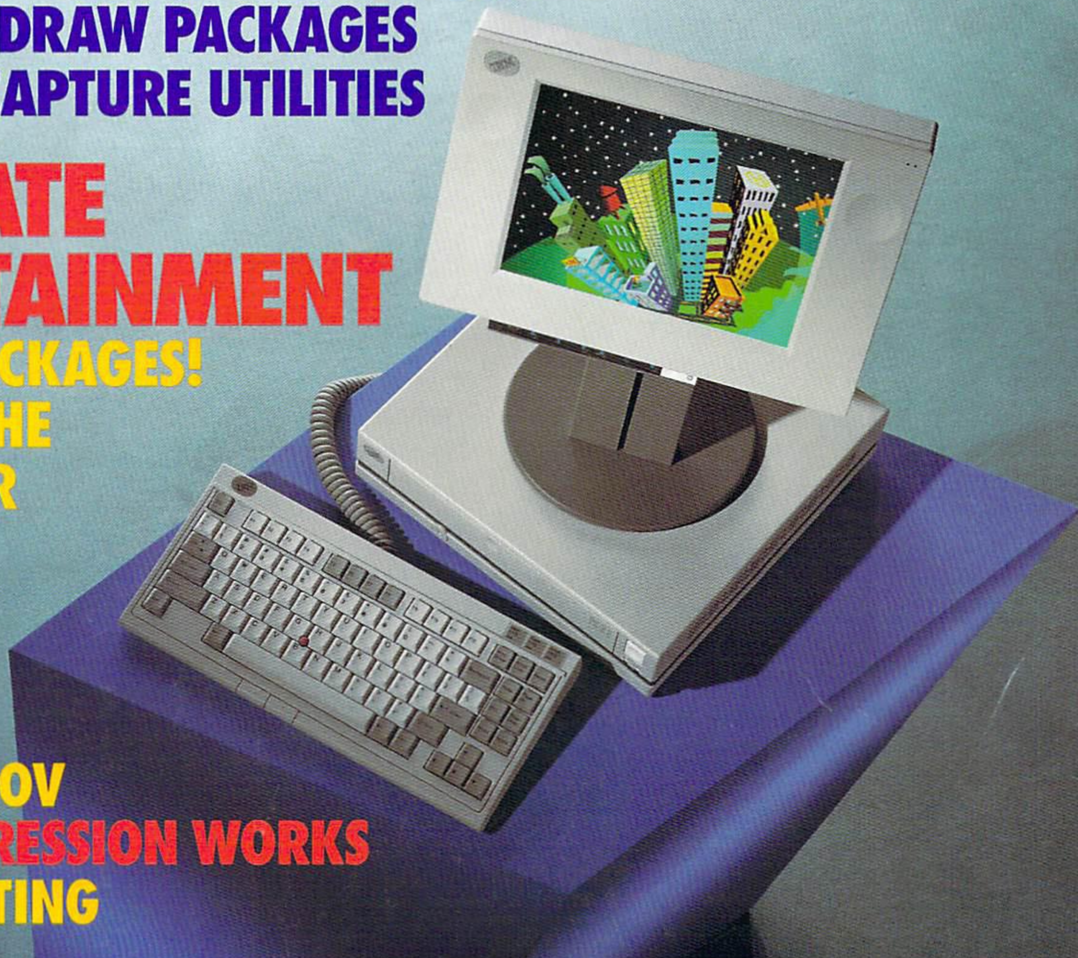

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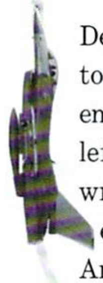

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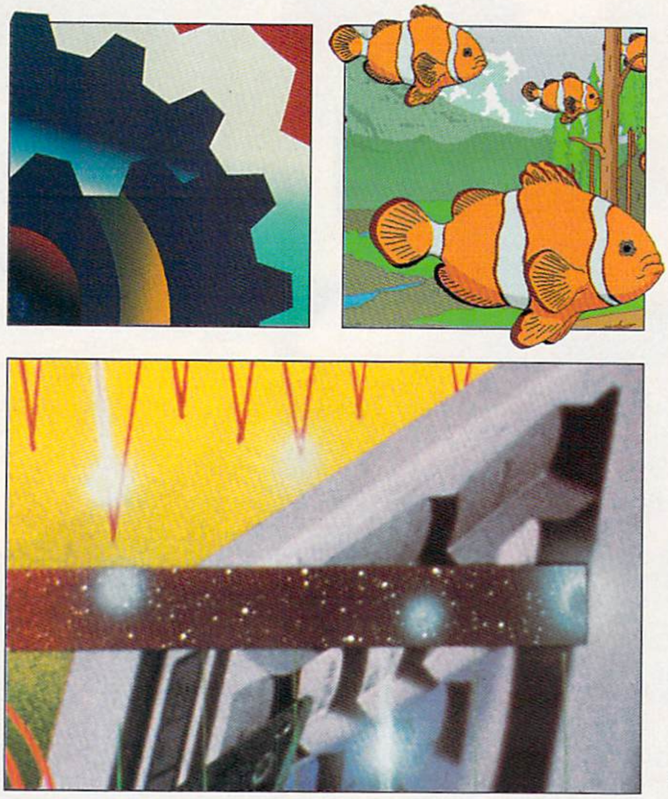

Cover photo by Mark Wagoner. IBM PS/2 E displaying clip art from Computer Support's Arts & Letters.

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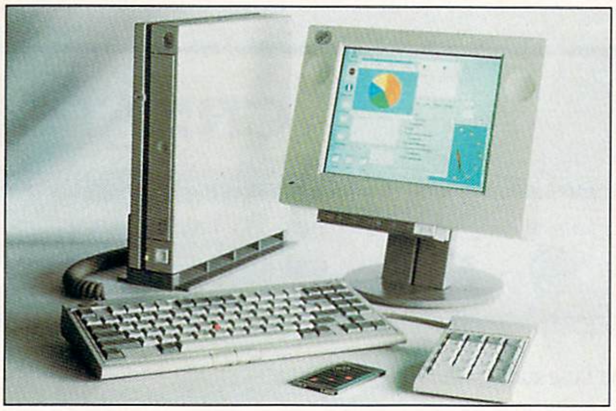
Clifton Karnes

I have seen the future, and it has an IBM logo on it. This may sound strange given IBM's stormy past, but it's true. As most of you know, IBM didn't create the computer revolution, but in 1981 it intercepted the ball from Apple, Commodore, and Atari and carried it for a touchdown. The original IBM PC was a big win for IBM, which all but walked away with the entire PC game.

But in the late 1980s, IBM started to fumble. It repeatedly introduced hardware that was underpowered and overpriced. OS/2 1.0 was a fiasco, and the company's highly publicized separation from Microsoft left IBM out in the cold without a software partner.

In 1981 IBM invented the original PC. This year it reinvented it.

But IBM has been bouncing back. With OS/2 2.1, it created an operating system that has intelligent design and delivers high performance. And the ThinkPad notebooks are a similar win for the company, setting new standards in performance, design, and price.



As superior as both of these innovations are, however, they pale beside IBM's latest hardware creation. This new PC from IBM points the way to the future so clearly, it almost takes your breath away. I'm talking about the PS/2 E—IBM's "green" PC, the machine on this issue's cover.

The PS/2 E (known simply as the E) is an innovation in several key areas. It conserves space, saves energy, cuts noise to near zero, and all but eliminates emf emissions.

The E's look is distinctive. The system box is only about one foot square and less than three inches high, bordered by a green band. The box's design is clean and uncluttered. On the front you'll see IBM's logo, an on/off switch, two small status lights, and a small panel. Where's the disk drive? Open the panel, and inside you'll find a 1.44MB floppy drive.

You'll find something else interesting inside: four PCMCIA slots. Instead of a traditional bus for hardware expansion, this PC uses PCMCIA cards. There are four bays which can accept either four Type 1 or Type 2 cards or two Type 3 cards (which are larger).

Open up the system box, and you'll find something else that's amazing. There's no fan. Since this PC runs on a low-power 50-MHz 486SLC2, there's no need for cooling, and as a consequence, there's no noise.

The machine also comes with 8MB of RAM and a 123MB hard disk (which is much too small).

The system unit's small footprint is matched by the keyboard's (there's no built-in numeric keypad, but one is available as an option). And the mouse is built into the keyboard. This is the same pointer used on IBM's notebooks, and although it takes some getting used to, it's quite serviceable. To move the mouse pointer, you press a small red button just below the G and H keys. The left and right mouse buttons are embedded in the keyboard below the space bar. You can use an external mouse if you prefer.

Atop the system unit you'll find the E's most talked about (and expensive) feature: a beautiful 10.4-inch active-matrix color LCD monitor that features XGA graphics and resolutions up to 1024 × 768. The display can handle 65,000 colors and is crisp and fast. It's also a whopping $3,000. If the LCD is too pricey, however, there's a low-power, low-emission CRT monitor available too.

When you boot up the E, you'll find yourself in the OS/2 2.1 Workplace Shell. If you're an OS/2 fan, you'll be right at home. And even if you're not, Windows 3.1 and DOS are just a couple of mouse clicks away. If you decide to bypass OS/2 altogether, you can move the WIN-OS/2 emulator or the DOS session to your OS/2 StartUp folder and land in either environment.

OS/2, however, is worth a look. It sports an attractive and full-featured interface that's more object-oriented and consistent than Windows 3.1.

Although the E is innovative in several areas, the heart of the machine is its power savings. Not only does this PC use less power than traditional ones, it has several power-saving features built in—just like most notebooks do. If the power-saving features are enabled, the E uses less power than a 60-watt light bulb. IBM estimates that an office running 100 Es would save $2,000 a year in electricity, but money isn't really the object; it's saving energy and reducing emf radiation.

The E has the price tag you'd associate with cutting-edge technology (about $5,330 with the flat-panel LCD display), but as more units are made with similar specifications, the price will surely go down. Meanwhile, think of this lean, sexy machine on your desk. The thought is sure to make you smile and sigh. ❐

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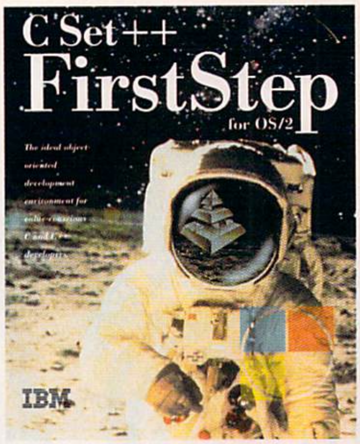
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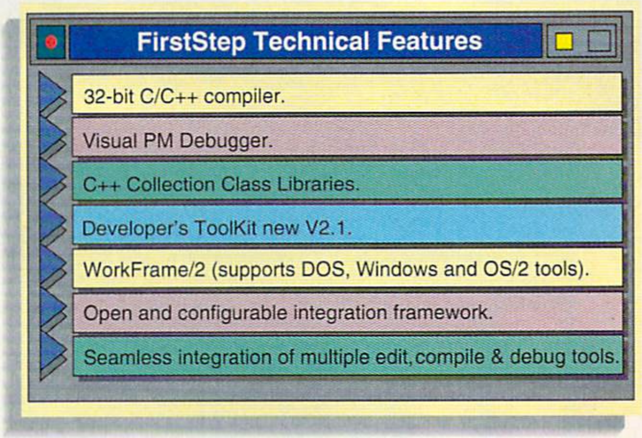

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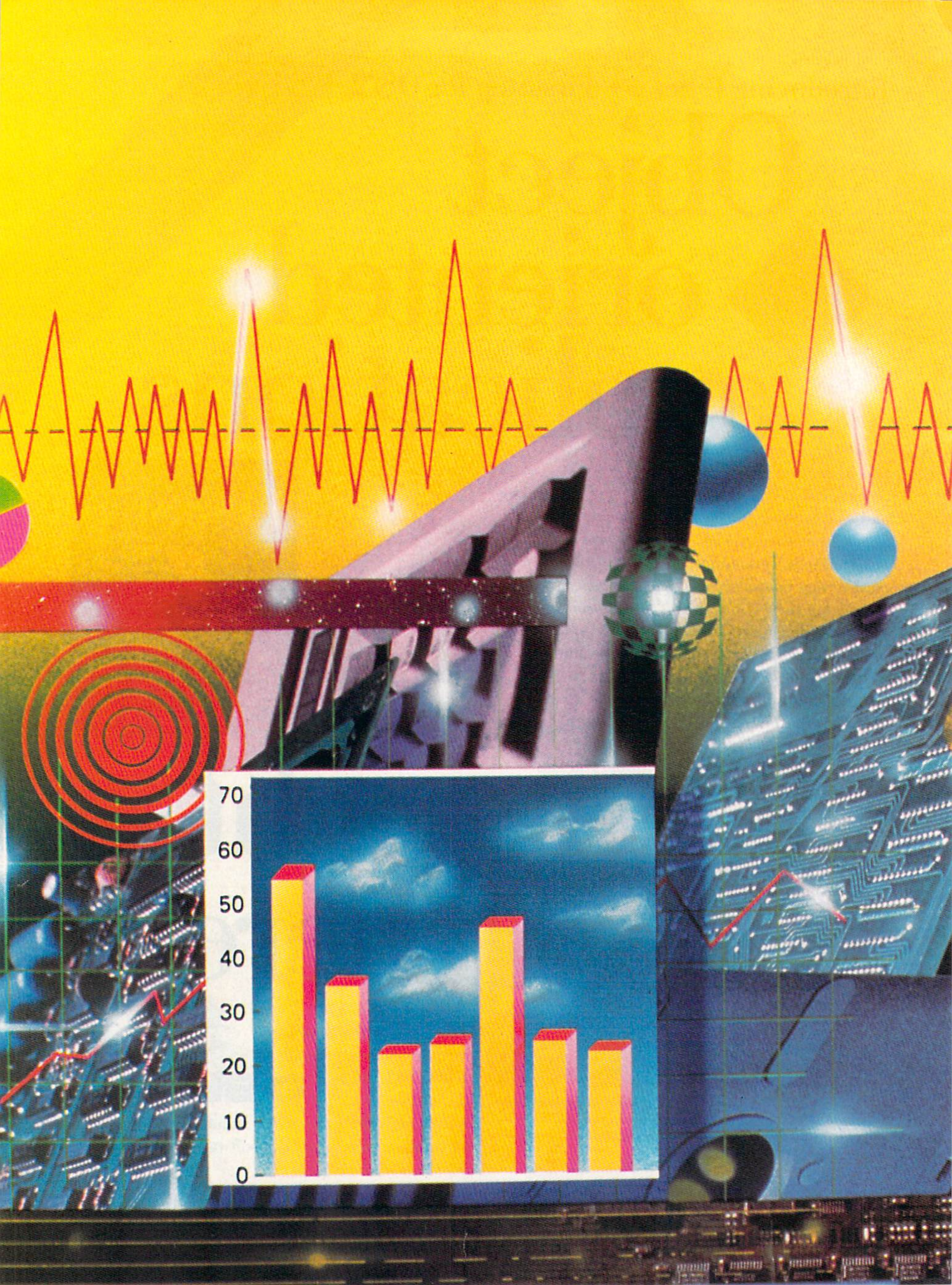
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WINDOWS:

TIPS FROM THREE WINDOWS ACES

BETTER,

THAT PUT THE WIN BACK IN WINDOWS

FASTER, MORE

BY TONY ROBERTS, DAN GOOKIN, AND CLIFTON KARNES

How can you make Windows more responsive and still enjoy the flexibility and power of the interface? Take control of icons, learn to make DOS windows more responsive, make memory do your bidding, optimize your interaction with your hard disk, and more. In this article you'll find tips that make Windows fly, tips that make Windows fun, and tips that make Windows phenomenal.

1 Reduce Font Load

If it seems as if your Windows applications take forever to initialize, your system may be suffering from font overload. Cut back on the number of active fonts in your system, and applications will load faster.

Although Windows 3.1 allows you to have hundreds of fonts active, doing so slows down program loading and slows down your work as you wade through font lists. The solution is to install only the fonts you use often plus those you need for specific purposes.

Perhaps the best way to manage fonts is with FontMinder 1.1 (Ares Software, P.O. Box 4667, Foster City, California 94404-4667; $79.95). This utility lets you group fonts that you use for specific projects in font packs. When you go to work on the company newsletter, simply drag in the fonts for that project. Once the newsletter is published, just drag those fonts out.

If you work with hundreds of fonts, FontMinder is the one utility that can help keep you sane.

2 Create Icons for Control Panel Selections

Control Panel contains a handy collection of utilities, but most people frequently use only one or two—maybe Printers or Desktop. To get where you're going faster, you can run your favorite Control Panel directly.

While in Program Manager, select File, Run. In the Command Line box, enter the command *control printers.* Control Panel will load and automatically start the Printers utility.

Better yet, create a special Program Manager icon to run any Control Panel utility directly. First, select File, New, Program Item; then click on OK. In the Command Line box, enter *control printers.* Next, select Change Icon, Browse. Then select the WINDOWS\SYSTEM subdirectory and in the File Name box enter *main.cpl.* Select the printer icon and click on OK. Select OK again to close the Program Properties dialog.

3 Start Screen Savers from an Icon

Windows screen savers are great for covering up your work while you turn your attention elsewhere, but there's no apparent way to start a screen saver on demand—you have to wait until the time delay occurs.

Here's how to start a screen saver from an icon.

Using NotePad or SysEdit, open up your WIN.INI file. Locate the Programs= line and type *scr* at the end of it. Restart Windows so this change takes effect.

Now, create an icon for your saver by selecting File, New, Program Item. To see the filenames for screen savers on your system, select Browse and enter **.scr* in the File Name box. Select one of the savers, and its name will appear in the Command Line box. Add a /s switch to the end of the command line, and click on OK.

Now you can start a screen saver immediately by double-clicking on its icon. If you want to change the screen saver's configuration, go through Control Panel as usual. If you want to start the saver with a hot key, edit the icon's properties to include a hot key.

4 Shift into High Gear

The Shift key is more powerful than it looks. Here are three Shift-key tricks.

- Hold down the Shift key when starting an application. The program will run, but it will be minimized.
- Hold down the Shift key when starting Windows to prevent the programs in your StartUp group from loading.
- Hold down the Shift key as you double-click on the Control-menu box to save your Program Manager settings without exiting from Windows.

5 Assign a Hot Key to Program Manager

How would you like a hot key that would get you back to Program Manager from wherever you are?

Open your StartUp group and select File, New, Program Item to create a new icon for Program Manager. Enter *progman.exe* in the Command Line box, and specify your preferred hot-key combination in the Shortcut Key box. Ctrl-Alt-Shift-P is a possibility.

At this point, you can further personalize your desktop if you like by adding some custom text in the Description box. For example, try typing in *Bob's Desktop* or *Tony's Analytical Engine.*

Click on OK to close the Program Properties dialog and double-click on the newly created icon to install your changes and activate your hot key. Because the new icon is in the StartUp group, your changes will go into effect every time you start Windows. Don't be concerned that this tip will leave you with multiple copies of Program Manager floating around. Program Manager is a single-instance application. If the program is already running when you try to run it, it merely becomes active rather than starting up a second copy.

6 Eliminate Group Clutter

Almost every Windows application wants to create its own Program Manager group. Before long, you'll be swimming—or perhaps drowning—in groups.

Create a more efficient workspace by putting the icons for all of your most-used applications in one Master group. Close all other groups, and then select Window, Tile to make your Master group fill the screen. This will allow you to perform most of your work without opening and closing a lot of groups.

Further reduce the group clutter by moving similar programs from their native groups to groups created based on function. For example, put all of your telecommunications icons in a Telecommunications group.

7 Reorder the Group List

You can open a Program Manager group that's not visible by selecting Window and then clicking on the name of the group from the numerical list. However, if you have several groups, your most-used groups may not appear at the top of the list. You can change the settings in the PROGMAN.INI file to make sure the groups you want are at the top.

First, make a backup copy of PROGMAN.INI; then load PROGMAN.INI into a text editor such as Notepad. The file includes a Settings section and a Groups section. Groups lists all of the groups you have created and assigns each a group number.

In the Settings section is a line that begins Order= and then lists a series of group numbers. To change the position of a group on the Window menu, place the group's number in the desired position on the Order= line. Restart Windows for the change to take effect.

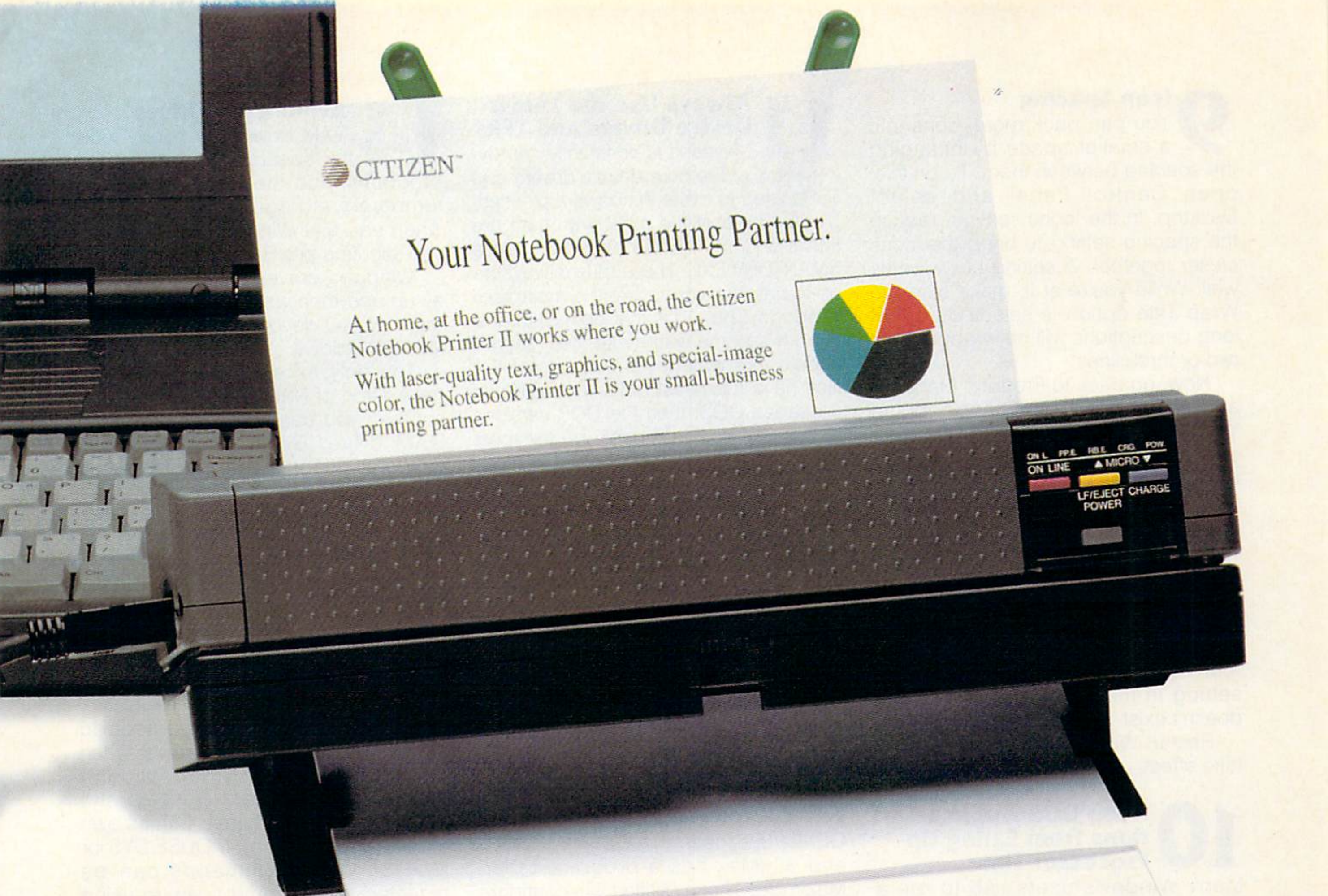
8 Can't See the DOS Error Message?

Sometimes when you're trying to run a DOS application from Windows, all you see is one flash of the DOS screen before the DOS box exits and returns to Windows. There's an error message there, but your eyes aren't quick enough to see it.

To get a good look at the error message so you can figure out what to correct, you need to edit the PIF file that controls the DOS application. Run Pifedit and load the appropriate PIF file. If the application has no specific PIF file, load _DEFAULT.PIF.

Deselect the Close Window on Exit item, and save the modified PIF. This leaves a DOS window open so you can read any error message that may have been created. Rerun the problem program, and take whatever steps are necessary to correct the problem.

When everything is working smoothly, reopen the PIF file and select Close Window on Exit.



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9

Icon Spacing

You can pack more icons into a smaller space by changing the spacing between them. To do this, open Control Panel and select Desktop. In the Icons section, reduce the spacing setting to bring the icons closer together. A setting of 60 works well. While you're at it, make sure the Wrap Title option is selected so that long descriptions will be wrapped into two or three lines.

Now, go back to Program Manager and select Window, Arrange Icons. Your icons will be nestled a little closer together, but the vertical spacing between rows of icons will be unaffected. Unfortunately, you can't change that setting from Control Panel. You'll have to edit WIN.INI to make that change.

Open WIN.INI with SysEdit or Notepad and search for the [Desktop] section. Look for a line that begins IconVerticalSpacing=. Change the setting in that line to 75. If the line doesn't exist, go ahead add it.

Restart Windows for the change to take effect.

10

Keep DOS Applications from Eating Up Processor Time

Many Windows users like to run a DOS session and leave it minimized on the desktop so they'll have quick access to the command line to execute DOS commands.

Although you'll rarely attempt to multitask such a DOS session, Windows doesn't know that, so it spends some of its time checking to see if there's any background work that needs to be done in that session.

You can save Windows some effort and speed up your other applications by editing the PIF file that runs your DOS session (usually DOSPRMPT.PIF) to reduce background priority.

Run Pifedit and open the appropriate PIF file. Click on the Advanced button and change the background priority to 1—the lowest possible setting. Save your changes.

Now you can keep your DOS icon minimized on your desktop, but Windows won't worry about checking in with the DOS session as often.

If you ever do need to increase the background priority for a specific reason, you can do it on the fly. If your DOS session is running full-screen, press Alt-space bar to make it a windowed session. Then select the Control-menu box in the upper left corner and choose Settings. Increase the background priority as needed to give the DOS session a greater share of the system's attention.

11

Always Use the Latest Device Drivers and TSRs

Microsoft is constantly improving some of the core device drivers and TSRs used to make Windows a pleasant place. Three of the most important are HIMEM.SYS, EMM386.EXE, and SMARTDRV.EXE. These must always be up-to-date for you to get the most from Windows. The rub is that both DOS and Windows come with these files, so you should use whichever versions of the files have the latest date. If you've just upgraded DOS, then the DOS versions of the files would probably be the most recent.

12

Manage Your Memory

Windows needs oodles of extended memory to run properly. You should configure your PC so that all of its excess memory is of the extended type. To do this and to get the most from Windows, you need to have a good memory manager installed. DOS 5 and 6 come with the programs to do this job, and third-party programs such as QEMM/386 and 386Max are more than up to the task.

With DOS 6, you prepare memory by running the MemMaker program. QEMM/386 uses the Optimize utility, and 386Max has a program called Maximize. These utilities will configure your PC's memory to work best with Windows by controlling extended memory and loading device drivers and TSRs into upper memory, thereby saving precious conventional memory for those programs that need it. This is all complex and heady stuff, but the memory configuration programs make it painless—and a chore you may need to do only once.

13

Use SMARTDrive or a Similar Disk-caching Program

Next to the printer, your disk drives are probably the slowest things Windows has to contend with. Even though your hard drive may be slippery fast, it can be made to work even faster by installing a disk-caching program. DOS comes with such a program, SMARTDRV.EXE, the SMARTDrive disk cache. Third-party disk caches are also available.

The disk cache you use will improve disk operations by storing disk information in memory. Since most information on the disk is read repeatedly, the disk cache speeds up operations by having Windows read the information from memory instead of the relatively slower hard drive. This can improve Windows' performance drastically—especially on systems with ancient hard drives.

14

Avoid RAM Drives

RAM drives are handy tools for speeding up some DOS programs, and they make wonderful temporary storage areas. However, when you use Windows, the memory you sacrifice to a RAM drive is wasted.

Windows craves memory. It eats it all up and then wants more. Whatever memory you devote to a RAM drive is lost to Windows.

The only exception here is if you have a ton of RAM—16MB or more. If so, then you can spare memory for a RAM drive. Even then, Windows would probably rather have all the memory for itself.

15

Avoid DOS Device Drivers and TSRs

Some of the device drivers and memory-resident programs you load in CONFIG.SYS or AUTOEXEC.BAT may be unnecessary for Windows—hogging memory that Windows would rather have for itself.

For example, there is no need to load the ANSI.SYS device driver when you use Windows. The command line–editing program Doskey isn't needed. Windows comes with its own mouse driver, so any MOUSE.SYS or MOUSE.COM commands can be resected as well. And if you're using the SMARTDrive disk cache, you can dispense with the Fastopen command. Just edit these lines from your CONFIG.SYS or AUTOEXEC.BAT file, and Windows will gladly gobble the memory they took.

There is an exception to this rule. If you run a DOS program in Windows and it requires a TSR, such as the mouse driver, then you should load it before Windows starts. However, if DOS programs are a thing of the past for you, then definitely get rid of the excess baggage.

16

Create a Permanent Swap File

Windows runs best in the enhanced mode, its preferred modus operandi for 386 and 486 PCs. And it runs better if you've created a permanent swap file, which Windows can use to boost your overall memory situation.

The permanent swap file is a large file on disk that Windows uses for storing information. You create it from the Control Panel; start the Control Panel and click on the 386 Enhanced icon and then the Virtual Memory button. If you have a permanent swap file already, statistics about it will appear on the screen. Otherwise, click on the Change button to create a permanent swap file for your system.

A good permanent swap file

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should be about 2MB in size. If you have a lot of memory in your PC (8MB or more) or you run complex graphics programs, consider a larger permanent swap file (say, 4MB).

17

Optimize Your Hard Drive

Regularly optimizing or defragmenting the hard drive will improve any PC's performance, especially a Windows system. The idea is to check all the files on your hard drive and patch up any that are fragmented. Files get fragmented as DOS tries to make the best use of disk space; larger files are split into smaller pieces to fit on the disk. It means you can store more stuff, but the fragmented files take longer to save and load since DOS has to keep track of the pieces.

Optimizing your hard drive is done in two steps, both of which should be accomplished before you start Windows. The first is to run DOS's Chkdsk program. This checks for lost clusters on the hard drive. If Chkdsk finds any, run the command again, but specify the optional /f switch. Then delete all the FILE*.CHK files Chkdsk recovers. (You'll probably want to delete them. The odds against their containing useful data are astronomical. When in doubt, load them into a text editor before deleting them.) After that, run a defragmentation program, such as Norton's SpeedDisk, PC Tools' Compress, or DOS 6's Defrag.

It's important to note that optimization isn't voodoo. It doesn't automatically make your PC run faster. Before you optimize, check the percentage of fragmented files. If it's below 10 percent, optimization isn't necessary.

18

Avoid Starting Too Many Applications with Windows

A lot of Windows utilities may automatically start themselves when Windows starts. When this happens, it takes you longer to get to work, since Windows spends a goodly amount of time running all those utilities and other programs. The way to stop this is either to remove some of the programs from the Program Manager's StartUp group or to edit the WIN.INI file and remove some of the files in the [Windows] section by the load= and run= prompts. The second method requires a little more Windows savvy, so you might want to consult with a guru before attempting it.

Note that some of the programs automatically loaded by Windows may be very necessary. For example, a screen saver or font manager is a good thing to have loaded. But starting the Clock or File Manager or other tools just slows down Windows.

19

Run Your Applications Full-Screen

Windows is about, well, windows. Your applications run in their own windows on the screen. And while it's fun to see both Excel and Ami Pro at the same time, it's more work for Windows to keep everything sane. You'll find your applications run better when they're maximized to fill the entire screen. (Another benefit of running your applications full-screen is that you see more of your work.) To do this, click on the Maximize button (the up-pointing triangle) in the upper right of every application window. Or drop down the Control menu (on the upper left of every application window) and select the Maximize item.

20

If You're Running Only One Windows Application, Run It in Standard Mode

Quite a few Windows PCs are set aside to do only one thing. Some may be running just WinWord or another word processor. Others may be order entry workstations running a database. If so, you'll see an improvement in performance if you start Windows in standard mode; type *win /s* at the DOS prompt to select standard mode.

The advantage here is that Windows runs without loading the overhead it needs to work with multiple programs in enhanced mode.

21

Close Applications You're Not Using

You don't have to quit a program to stop using it in Windows. If you tire of WinWord, you can minimize the program and switch over to your Games group for another two hours of Solitaire. Then you can easily switch back to WinWord when the boss lumbers by. While this is what multitasking is all about, having WinWord running drains power from Windows.

Some users will have a whole row of minimized applications lined up at the bottom of the desktop. Each of those applications draws on Windows' resources, impeding system performance. If you're truly going to stop work on a program, then exit it instead of switching away.

22

Use a Plain Desktop Pattern

Falling leaves, interlocking Escher patterns, and comic-book heroes often provide the backdrop for Windows' desktop. But these graphics occupy memory and take time to paint on the screen. If you're willing to sacrifice beauty for performance, then use the Control Panel's Desktop item to give Windows a plain background. This uses less memory and makes Windows screen redraws faster.

23

Switch to Lower-Resolution Graphics

Just because your SuperDooperVGA card can support a zillion-by-zillion graphics resolution doesn't mean you have to use it. The higher resolutions Windows supports use more system resources and take longer for Windows to manage. To recover some of your performance losses, switch Windows to a lower graphics resolution, which is probably supported by your video hardware. In fact, the boring old VGA resolution is the fastest of the lot. It's also easier to read a 640 × 480 or 800 × 600 screen than screens of higher resolution (particularly if your eyes are over 40).

24

Print to a Networked Printer

The slowest part of any computer setup is the printer. No matter how fast the printer, data slows to a crawl as it's transferred to paper. One solution is to use the Print Manager to handle printing. But better than that is to print to a network printer. You'll see files virtually fly off the screen, seemingly printing in an instant. Don't get too excited, however. Your printout is just waiting elsewhere on another computer that's having to toil with printing. But in the meantime, you've wrested control of Windows and can get on with something else. (Needless to say, this trick doesn't work if you don't have a network or a network-designated printer.)

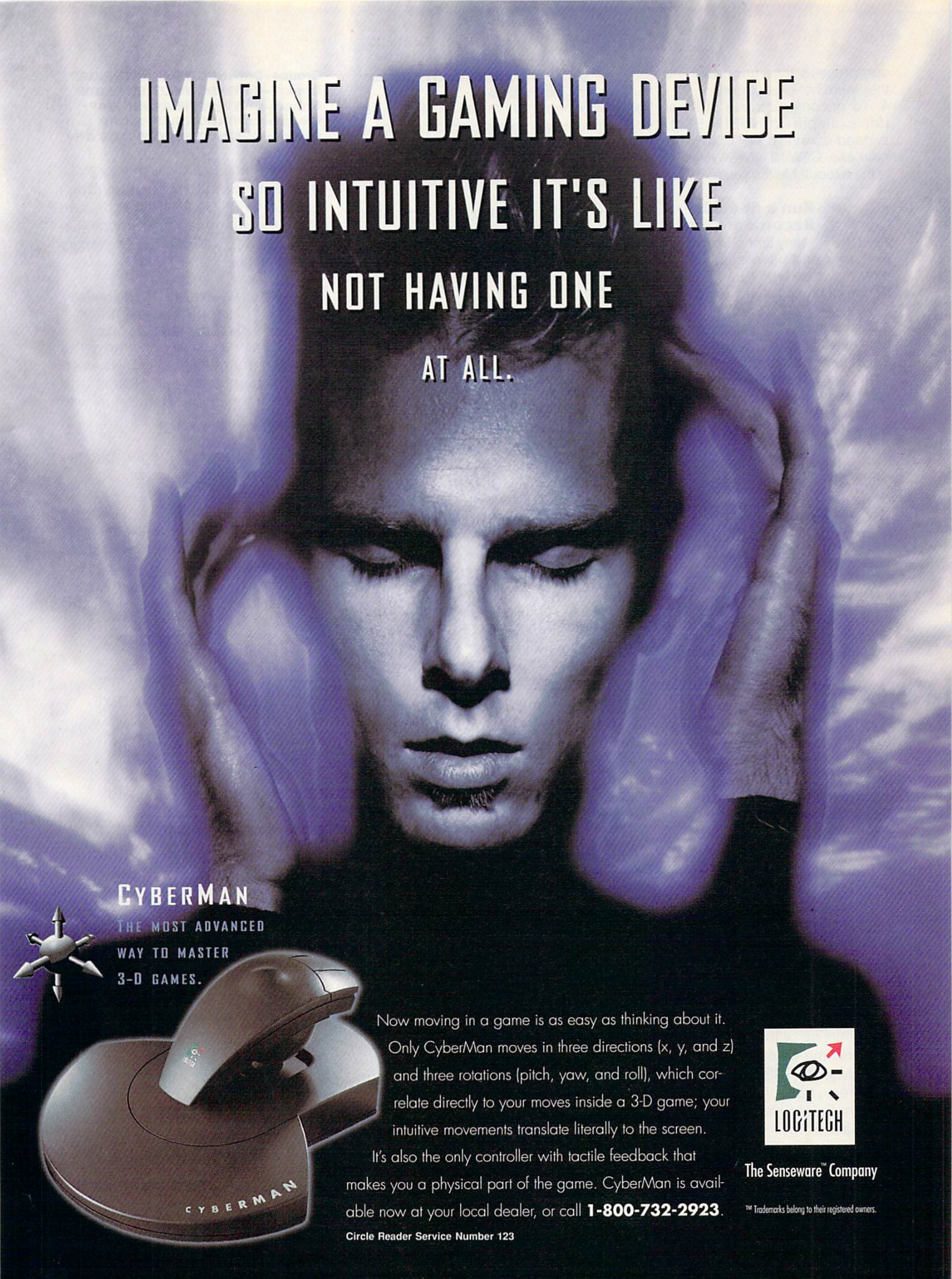
25

Reinstall Any Windows Program Without Running Setup

There are many times when you need to reinstall just one program, file, or group of files from the Windows distribution disk. You usually can't do this without reinstalling all of Windows again.

The solution is to decompress the files on the Windows distribution disks.

1. Find the EXPAND.EXE program on the Windows distribution disks. (It will probably be on disk 1 or 2.)
2. Copy EXPAND.EXE to your WINDOWS subdirectory.
3. You'll notice that most of the other files on the disk have extensions that end with an underscore (for example, WINHELP.EX_, MOUSE.DR_, and so on). These are compressed files. (Note that in early versions of Windows, the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compressed files ended in EXE, but they were not executable.)
4. To decompress one of these files (for example, WINHELP.EX_), type *expand a:winhelp.ex_ c:\windows\winhelp.exe.* C:\WINDOWS\WINHELP.EXE is the executable file you're creating.

26 Run a Specific Recorder Macro

Many times, you want to run Recorder and have a specific macro execute. You won't use it often, but Recorder has a hot-key switch.

1. Make sure your macro specifies a hot key.
2. On the command line, put *recorder -h hot key filename.ext,* where filename.ext is the name of the Recorder macro and hot key is the key combination that normally runs the macro.

For the hot key, use the following symbols, plus the key name.

Key	**Symbol**
Alt	%
Ctrl	^
Shift	+

For example, if your hot key is Shift-F10 and your macro file is named MYMACROS.REC, you would type *recorder -h +f10 mymacros.rec.*

27 Create New Colors

Most people don't know the RGB values for colors, even the basic ones, and when you need to supply the RGB value for a color, you usually find yourself behind the eightball (RGB value 0, 0, 0). The solution is to use the color selector in Control Panel.

1. Run Control Panel and double-click on the Color icon.
2. Press the Color Palette button and press the Define Custom Colors button.
3. In the Custom Color Selector dialog box, you'll see a matrix of all of the available system colors. You can select one with the mouse and see its RGB values in the three text boxes on the right side of the dialog box. When you find the color you want, simply write down its RGB value.
4. When you're finished using the Custom Color Selector, click on Close and Cancel.

You can use these RGB values to specify colors in Windows Paintbrush, for example. Double-click on a color in the palette and enter the RGB values in the dialog box that appears.

28 Delete Unnecessary Files

Windows requires a large investment in disk space, which you may not be able to afford. You can ease this problem by deleting unnecessary files.

1. Run File Manager and move to your WINDOWS subdirectory.
2. You can safely delete any of the following files, provided you don't need the applications.

*.BMP (These are bitmap files—probably wallpaper.)
*.SCR (These are screen saver files.)
CALC.EXE, CALC.HLP (Calculator and its help file)
CALENDAR.EXE, CALENDAR.HLP (Calendar and its help file)
CARDFILE.EXE, CARDFILE.HLP (Cardfile and its help file)
CLOCK.EXE (Clock)
MSDOS.EXE (the MS-DOS executive)
PBRUSH.EXE, PBRUSH.DLL, PBRUSH.HLP (Paintbrush, its DLL, and its help file)
RECORDER.EXE, RECORDER.DLL, RECORDER.HLP (Recorder, its DLL, and its help file)
REVERSI.EXE, REVERSI.HLP (Reversi game with its help file in Windows 3.0)
WINMINE.EXE, WINMINE.HLP (Minesweeper game with its help file in Windows 3.1)
SOL.EXE, SOL.HLP (Solitaire game with its help file)
TERMINAL.EXE, TERMINAL.HLP (Terminal and its help file)
WRITE.EXE, WRITE.HLP (Write and its help file)

29 Edit PROGMAN.INI

Here's the scenario: Windows boots, and one or all of your groups are lost. You can fix problems like this if you know how to edit PROGMAN.INI.

1. Run Notepad and load PROGMAN.INI (you'll find it in your WINDOWS subdirectory).
2. The file has two sections, [Settings] and [Groups], with the following form.

```
[Settings]
Window=-4 0 801 528 1
SaveSettings=1

[Groups]
Order= 7 1 5 4 3 2 8
Group1=C:\WINDOWS\MAIN.GRP
Group2=C:\WINDOWS\ACCESSOR.GRP
Group3=C:\WINDOWS\GAMES.GRP
Group4=C:\WINDOWS\STARTUP.GRP
Group7=C:\WINDOWS\UTILITIE.GRP
Group5=C:\WINDOWS\QCWIN.GRP
Group8=C:\WINDOWS\APPS.GRP
Group9=C:\WINDOWS\WPW51US.GRP
```

3. If your groups are still in your WINDOWS subdirectory but they don't appear in PROGMAN.INI, simply add them, following the form Groupn=C:\WINDOWS\GROUPNAME.GRP, where n is the number of the group.

30 Re-create Windows Default Program Groups and Icons

It's often necessary to know the default arrangement Windows used when it installed your groups and icons. The solution: Run Setup with the /p parameter.

1. From Program Manager, choose File, Run, and type *setup /p.*
2. Click on OK.

Running Setup/p will re-create your default groups and icons, but if there are just a few items out of place, you may want to do it yourself. Here are the groups and icons Windows 3.1 installs.

Main	**MAIN.GRP**
File Manager	WINFILE.EXE
Control Panel	CONTROL.EXE
Print Manager	PRINTMAN.EXE
Clipboard	CLIPBRD.EXE
MS-DOS Prompt	DOSPRMPT.PIF
Windows Setup	SETUP.EXE
PIF Editor	PIFEDIT.EXE
Read Me	README.WRI

Accessories	**ACCESSOR.GRP**
Write	WRITE.EXE
Paintbrush	PBRUSH.EXE
Terminal	TERMINAL.EXE
Notepad	NOTEPAD.EXE
Recorder	RECORDER.EXE
Cardfile	CARDFILE.EXE
Calendar	CALENDAR.EXE
Calculator	CALC.EXE
Clock	CLOCK.EXE
Object Packager	PACKAGER.EXE
Character Map	CHARMAP.EXE
Media Player	MPLAYER.EXE
Sound Recorder	SOUNDREC.EXE

Games	**GAMES.GRP**
Solitaire	SOL.EXE
Minesweeper	WINMINE.EXE

StartUp	**STARTUP.GRP**

Initially, there are no files in the StartUp group. ❑

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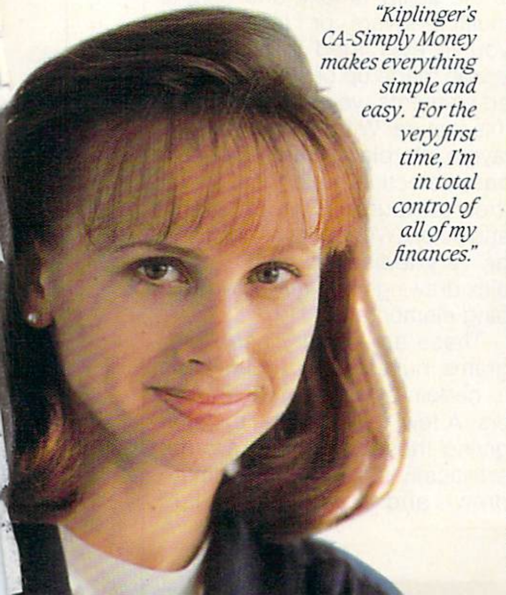

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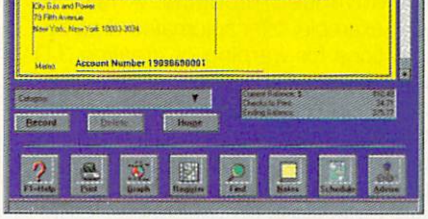
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TEST LAB

Edited by Mike Hudnall
Reviews by William Harrel

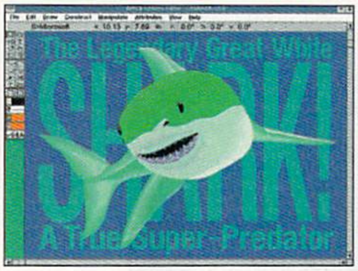
Not long ago, graphics artists and desktop publishers believed that using a Macintosh was the only way to create quality logos, brochure covers, and other graphics—especially full-color drawings. And that may have been true, once. But the Windows draw programs covered in this month's Test Lab have closed the gap.

Until Windows 3.0, PC users were hard-pressed to create sophisticated full-color drawings on their PC-based equipment. The areas where designers need the most strength—display, type control, and printing—were all lacking in power. Now there are high-color and true-color video, Adobe Type Manager and TrueType font rendering, better PostScript printer drivers, color printers priced at under $3,000, and finally, a crop of excellent drawing programs that exploit the potential of Windows.

Of the ten programs reviewed here, some are full-featured applications that can perform almost any graphics function you can think of (and some you couldn't imagine), some are economy packages, and some are specialized illustration packages.

All of these packages claim ease of use—but *ease* is a relative term here. If all you want to do is to create monotone logos and graphics for stationery or a newsletter, or full-color images for your monitor, then learning to use any of these products is easy. However, taking one of them (especially one of the high-end products) to its full potential requires much more than mastering the rudiments of the program. You must, for example, understand several prepress and commercial printing practices, such as color separations, knockouts, trapping, overprinting, and printing to film on a high-resolution imagesetter. These concepts and others, such as halftoning, fall within the realm of the graphics artist and designer. Learning them is nothing like falling off a log.

All ten programs were tested on a 33-MHz 486 with 20MB RAM, a 24-bit display adapter, and a high-resolution 19-inch monitor. Drawings and separations were printed on both a 300-dpi laser printer and a 1270-dpi Linotronic 330. Not all of the programs require this much muscle, but the high-end programs—CorelDRAW!, Micrografx Designer, Adobe Illustrator, Aldus FreeHand, Professional Draw, and Arts & Letters Graphics Editor—really do perform better on a high-speed CPU with plenty of RAM and a graphics accelerator. The others—Aldus IntelliDraw, Arts & Letters Apprentice, Graphics Works, and Visio—all run well on a 386.



In one way or another, all of these programs let you achieve the same end—camera-ready art. But they take you to that end with varying degrees of efficiency and using different sets of priorities. This is especially true of the advanced products. A few, for example, offer automated draw options for warping or creating 3-D objects. Others concentrate more on full-color prepress output, with features such as monitor calibration and enhanced PostScript separations. Which one is best for you? It depends on your needs. Monitor calibration and enhanced printing, for example, ensure greater color control and fewer prepress mishaps. Automatic drawing features can save hours—especially if you don't know how to draw special effects manually.

All of these programs, except Visio and IntelliDraw (which handle drawing much differently), have the following features in common:

- Bézier curve editing. You can add multiple handles (or nodes) to lines and contour line segments independently for precise drawing and editing.
- Gradient and radial fills. These involve the fading of one color gradually into another. All programs do this automatically.
- Fitting type to a path. This is the aligning of text along a curve or other shape. When done manually, this can be an extremely time-consuming process.
- Tracing bitmaps. This involves turning bitmaps into vector drawings for easier editing and high-resolution printing. (The two scaled-down packages do not have this feature.)
- Clip art libraries. These are canned images you can use as is or edit as needed.

There are, of course, many other common features, such as the ability to align objects on grids or in relation to other objects. Most programs let you draw various shapes or blend one object into another.

Another important feature that most of these programs support is the ability to lock and control multiple layers, or "layering." If you've ever tried to create an image made up of several stacked elements, you will appreciate this feature. With it, you can lock layers into place, name them for easy selection, hide them, copy their attributes to other layers, and so on. Without layering, it can be very tedious to create complex drawings with many overlapping elements.

These are all very good programs, but some are more suited to certain applications than others. A few, for example, excel at giving those of us who are not artistically inclined the ability to draw—and draw well. Others work better for graphics artists who already know how to draw. Visio and IntelliDraw make creating diagrams and floor plans a snap. And so on.

One problem with trying to categorize these products is that there is such an overlap of features. But here goes: If you are a graphics artist with strong drawing skills and prepress knowledge, you will get the most from Designer, Illustrator, or FreeHand. If you don't draw and need automated drawing features, consider Arts & Letters Graphics Editor, Professional Draw, or CorelDRAW!. For blueprints, floor plans, and diagrams, check out IntelliDraw or Visio.

The two low-end draw programs are great for creating color computer-screen drawings or monotone graphics for newsletters and reports. However, if you are not artistically inclined, you should probably choose one of the programs that support automatic perspective and three-dimensional effects.

Whatever your needs and abilities, this month's Test Lab has information that should help you understand Windows draw software and choose the product that's best for you.

WILLIAM HARREL

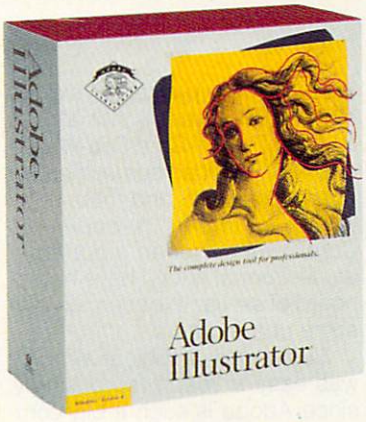
Adobe Illustrator 4.01 for Windows
Minimum requirements: 386 PC, 4MB RAM, VGA
Suggested retail price: $695

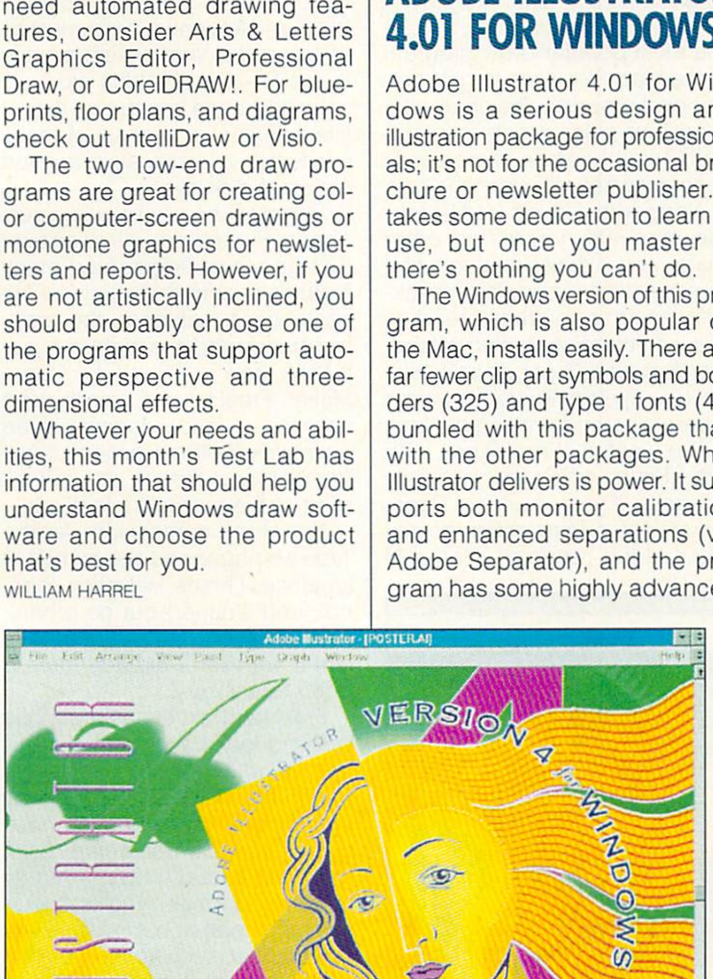
ADOBE SYSTEMS
1585 Charleston Rd.
P.O. Box 7900
Mountain View, CA 94039-7900
(800) 833-6687
(415) 961-4400

ADOBE ILLUSTRATOR 4.01 FOR WINDOWS

Adobe Illustrator 4.01 for Windows is a serious design and illustration package for professionals; it's not for the occasional brochure or newsletter publisher. It takes some dedication to learn to use, but once you master it, there's nothing you can't do.

The Windows version of this program, which is also popular on the Mac, installs easily. There are far fewer clip art symbols and borders (325) and Type 1 fonts (40) bundled with this package than with the other packages. What Illustrator delivers is power. It supports both monitor calibration and enhanced separations (via Adobe Separator), and the program has some highly advanced text-formatting features, such as automatic column flow and sculptured text wraps. Only CorelDRAW!, Professional Draw, and Designer (and desktop publishing software) offer as much formatting control.




Adobe Illustrator - [POSTER.AI]
File Edit Arrange View Paint Type Graph Window
Help
ILLUSTRATOR
ADOBE ILLUSTRATOR
VERSION 4 for WINDOWS

Illustrator comes with a full-featured, data-driven overlay for making charts that (though a little slow) eliminates the need to go elsewhere to include professional graphs in your drawings and publications. It supports numerous color models, including CMYK, RGB, PANTONE, FocalTone, Toyo, and TruMatch—all built-in.

Text can be fitted to a curve with Illustrator or with a separate utility, Adobe TypeAlign. TypeAlign allows you to do stupendous special effects with text, such as stretching, warping, adjusting perspective, and creating 3-D effects. However, it works strictly with text (no other objects), and you must import your creations or bring them in on the Clipboard. With either method, you cannot edit the text once it is in Illustrator.

An important strength of Illustrator is that it creates its images in PostScript format. Although all the others allow you to export drawings in PostScript, it is Illustrator's native format. The advantages are many, including compatibility with almost every other draw, desktop publishing, word-processing, and presentation program available, not to mention desktop publishing service bureaus. And even in the best of the other draw packages, exporting to EPS format is not always foolproof. With CorelDRAW!, for example, you can sometimes export a file to EPS and then, upon trying to import it back into CorelDRAW!, get an *inappropriate file format* error. I have had or heard of similar experiences with some of the others.

Illustrator's technical support was easy to reach (surprisingly, since Adobe is such a big company), and the technician knew his product well. Again, if you want to create simple graphics to include in newsletters, or onscreen, or in slide presentations, you should probably choose something that's easier to use. In fact, only one other program reviewed here, Aldus FreeHand, has as high a learning curve as this one.

Illustrator is still a little slow in places, such as in screen redraws, and its font and clip art selection are limited. But if you plan to do desktop design at this level, you probably already have a bunch of fonts and are not really concerned with clip art. If you're serious about graphics design, Illustrator is worth spending the time to master.

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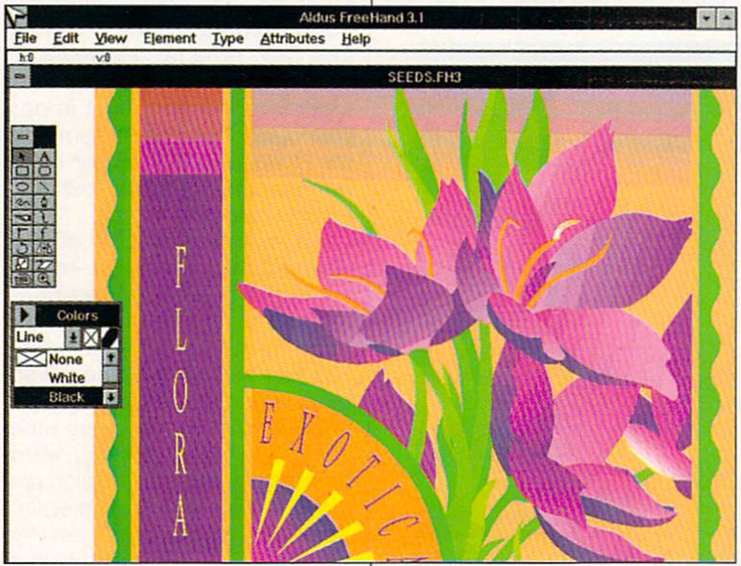
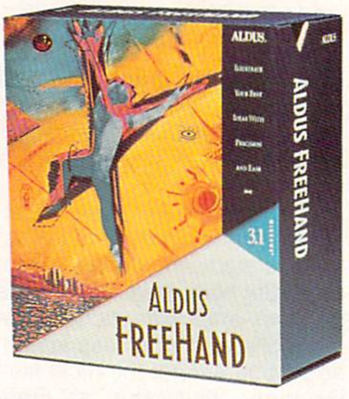


Aldus FreeHand 3.1
Minimum requirements: 386 PC, 4MB RAM, high-resolution graphics adapter, mouse
Suggested retail price: $595

ALDUS
411 First Ave. S
Seattle, WA 98104
(206) 628-2320

ALDUS FREEHAND 3.1



The most popular draw program on the Mac, FreeHand targets professional graphics designers who need four-color prepress precision. This becomes immediately apparent when you open the box.

Along with Aldus's traditionally fine manuals, you'll find color charts and extensive information on separations, trapping, knockouts, and many other prepress and commercial-printing topics. There's even a 75-page booklet devoted to explaining process-color separations and printing to film.

You install FreeHand with Aldus Setup, which you will surely recognize if you use Aldus PageMaker, Aldus Persuasion, or any other Aldus program. Not only does Setup give you complete discretion over what files are installed, but it also lets you run diagnostics to ensure that your system is ready to use FreeHand. Aldus products share the same import and export filters; if you use several of these products, you can save a good chunk of disk space.

PageMaker users who purchase FreeHand will discover that the two packages have many features in common, such as the pasteboard metaphor, the grabber hand, and the right-mouse-button view control. Like PageMaker, FreeHand is friendly and easy to use. And it comes with an Asymetrix ToolBook online tutorial that demonstrates (a little slowly) most of the program's features.

FreeHand comes with Adobe Type Manager and the standard typefaces (Times, Helvetica, Symbol, and Courier) but no others. This limitation can be inconvenient if you don't already have a good font library.

FreeHand excels as a serious drawing tool. Layer control is extensive, with the number of layers supported being limited only by system memory. You even have the option of assigning brief notations to each layer—highly convenient for making notes to yourself (or others) about invisible layer attributes, such as line weights, or the reasoning behind halftone screen settings. You can work on up to nine drawings at once. Styles can be created for repetitive tasks. FreeHand provides 99 levels of Undo. Monitor calibration and PANTONE matching are built-

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in. And printing is enhanced with printer-specific add-ons that provide screening and other important controls to the Windows PostScript printer driver.

Two interesting features are automatic reblending and pressure-sensitive freehand drawing. With automatic reblending, when you change the shape of one or two blended objects, FreeHand automatically redraws the blend. All the other programs (except CorelDRAW!) require you to reblend the objects. Pressure-sensitive freehand drawing lets you simulate traditional pencil and brush strokes with a pressure-sensitive digitizer. And for those of us without graphics tablets, the feature works with a mouse and the right- or left-arrow keys.

I found only two drawbacks to FreeHand—the small sampling of fonts and Aldus's technical support policy. Free support is offered for only 90 days, after which you must purchase additional time or use a 900 number. With a product this sophisticated, your support needs could easily extend well beyond 90 days.

This application's ability to swap files with its Macintosh counterpart can save time at the service bureau, since most service bureaus are still Mac oriented.

No program, except perhaps Adobe Illustrator, provides better, more predictable output. Its Macintosh artist's-station roots render it ideal for professionals (and would-be professionals). If you need precision, you cannot beat FreeHand.

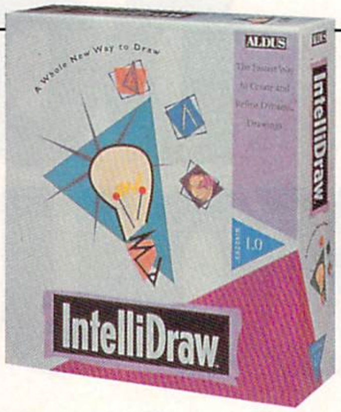
Circle Reader Service Number 372

ALDUS INTELLIDRAW 1.0

Aldus IntelliDraw combines a draw program with rudimentary CAD and presentation features. The program sports a standard draw-program interface with Bézier drawing and editing, sophisticated technical drawing, and simple animation. Whether you need to create simple drawings to embellish reports or draw up plans to redesign the office, IntelliDraw will make the job easier and more fun.

Aldus IntelliDraw 1.0
Minimum requirements: 386 PC, 4MB RAM, VGA, mouse
Suggested retail price: $299

ALDUS
5120 Shoreham Pl.
San Diego, CA 92122
(619) 558-6000

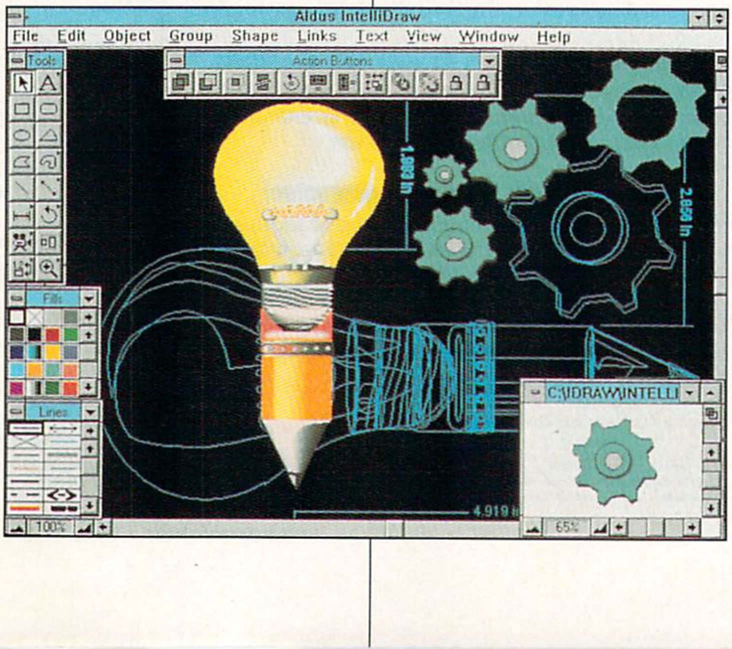


IntelliDraw is powerful. You'll have to spend some time to master all of its rich, innovative features. But once you get the hang of it, you may prefer IntelliDraw to CorelDRAW! or whatever else you're using now. Aldus takes some of the pain out of learning the program with a well-done 90-minute training video that covers almost all of the program's important features. After watching it, I understood IntelliDraw's sheer power and couldn't wait to get started.

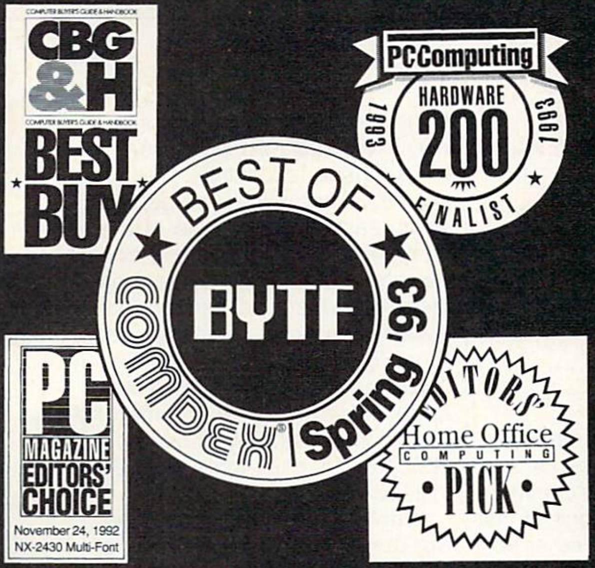
A palette of action buttons lets you lock objects on a page, link them to other objects, group objects and ungroup them, and perform a number of functions that other programs require you to wade through layers of dialog boxes to achieve. IntelliDraw's toolbox is full of easy-to-use drawing tools, such as the Connector tool that allows you to draw lines that automatically snap to and connect objects. Connections can be locked, stretched, rotated, or drawn at right angles.

Another impressive feature is Auto Align. A pair of cross hairs follows your mouse as you draw, like a pair of automatic intersecting rulers. The cross hairs, or guides, run the length of the document window, allowing you to align the object being drawn with other objects. Auto Align also lets you align existing objects in relation to one another. When, for example, two or more objects are exactly centered, the guides form a cross over them, indicating perfect alignment.

Unlike other draw programs (which use grids and an alignment dialog box to accomplish the



We look terrific in basic black...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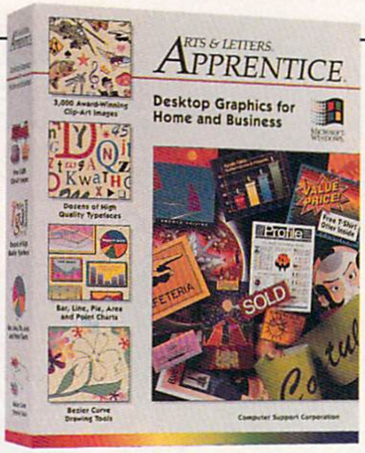
ARTS & LETTERS
APPRENTICE
Desktop Graphics for Home and Business
Computer Support Corporation

same feats), IntelliDraw doesn't force you to turn off the alignment feature to place objects freely, nor do you have to open a dialog box to align objects. The cross hairs constantly inform you where an object is in relation to other objects in your drawing.

Yet another slick feature is the user-defined symbol library. You can add objects to your symbol library and delete objects from it. You can also edit symbols once they are defined. Symbols are linked; if you use the same symbol several times throughout your document (remember that documents can have unlimited pages), you can edit it once in the symbol library, and IntelliDraw will update every occurrence in the document.

There's also a collection of "intelligent" clip art, such as office furniture and landscaping elements. You can add drawers to file cabinets or change the shapes of trees simply by double-clicking on them. For example, you can change a pine tree to an oak with a couple of mouse clicks. Change a chair into a sofa by stretching it. No, you don't get a distorted, elongated chair, as you do with other clip art. Intelligent clip art actually converts the chair to a sofa.

There's one important drawback, though: The program does not support process-color separations. Creating camera-ready art for multicolored documents could be a problem. You can, however, print separate layers, which will give you spot-color separations.

The color separation issue aside, IntelliDraw is a great, innovative draw program, especially for $299. While it's not for commercial prepress applications, it fits neatly into a number of other applications. Like most other Aldus software, it is a solid performer. And since there is an identical Macintosh equivalent, it's easy to distribute your drawings across platforms or on a network.

Editor's note: By the time this review appears, there may be a new version of Aldus IntelliDraw.

Circle Reader Service Number 373

ARTS & LETTERS APPRENTICE 1.2

Arts & Letters Apprentice 1.2
Minimum requirements: 386 PC, 2MB RAM
Suggested retail price: $169.00; $29.95 for Jurassic Art

COMPUTER SUPPORT
15926 Midway Rd.
Dallas, TX 75244
(214) 661-8960

Until I had an opportunity to open a few menus and see what was missing, it was hard to tell the difference between Apprentice and its high-end brother, Graphics Editor. The installation is the same, the interface is identical, and so on. With Apprentice, you get the same ease of use, some of the same great clip art images, and the same cataloging system as with the advanced version, for about a quarter of the price. What you do not get with Apprentice is the very sophisticated perspective/warp feature, as many clip art images (3000 rather than 5000), or as many fonts (only 25 instead of 81).

With Apprentice, Computer Support offers styles and a scaled-down graphing option. If your work requires you to do color separations, Apprentice can handle the job; Windows Draw! (the draw program in the other budget-minded package reviewed here, Micrografx's Graphics Works) can't do color separations. As with Graphics Editor, the screen redraw is a little slow. But otherwise, this is a slick graphics program for nonprofessionals. This is also a great program for teaching children about computer graphics. If you're trying to stay within your budget and need a great draw program, check this one out.

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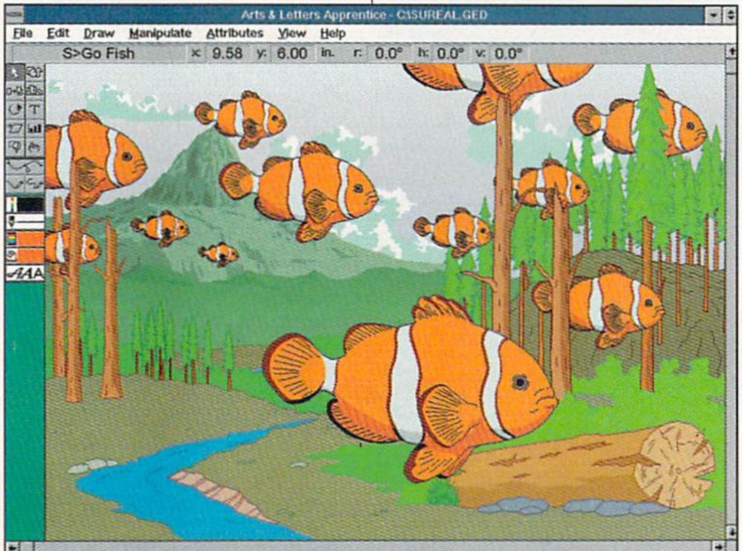
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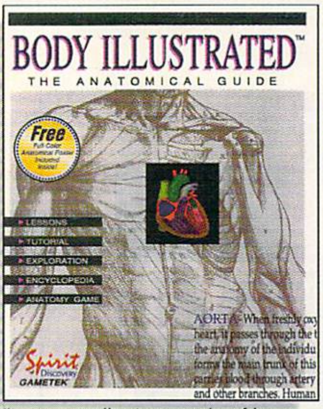
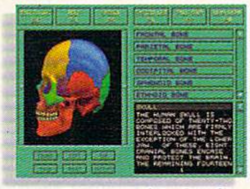
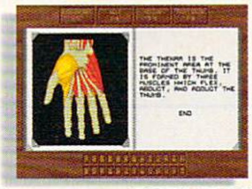
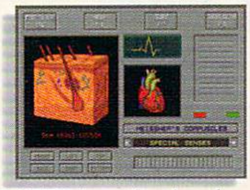


"…an excellent example of how interactive programs can succeed as teaching tools."
PC Magazine

Designed to be fun and easy to use, BODY ILLUSTRATED is a visual and audio guide to exploring the human anatomy. BODY ILLUSTRATED examines hundreds of body parts from different views and is full of detailed illustrations with stunning realism. With just a click of the mouse, each part is explained in clear, non-technical language. A digitized voice provides the correct pronunciation of anatomical part names, "Instant Help" eliminates the need for referring to the manual.

BODY ILLUSTRATED teaches either by lesson method or through the use of the game mode. It is an ideal study guide for students. It's also a valuable reference tool for lawyers, doctors, nurses, clinics, or anyone who needs to know about the human anatomy. Instructors can easily use BODY ILLUSTRATED as an interactive anatomy teaching aid. Included in the box is a full-color anatomical parts poster and a written study guide.

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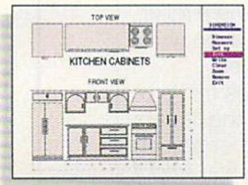

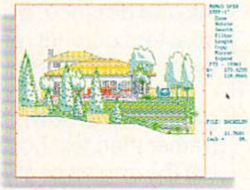
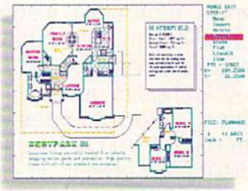

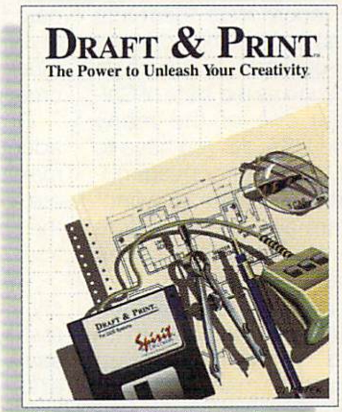

DRAFT & PRINT is a simple, yet powerful drafting program that's easy enough for the beginner, yet powerful enough for the professional. From floor plans and interiors to landscapes, technical illustrations, engineering diagrams, and architectural plans; the tutorial will have you designing on the day you install the program. With DRAFT & PRINT's extensive collection of drawing tools, full layering, powerful text scaling and rotation, your drawings will be far more accurate and to scale than if done by hand. And changes are a snap, saving you countless hours in editing.

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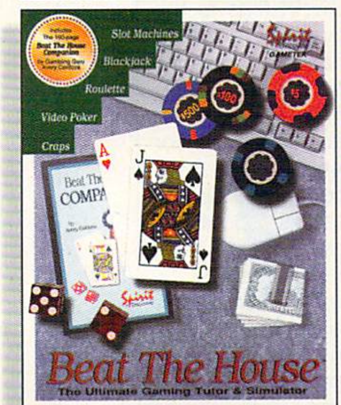

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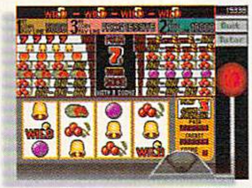
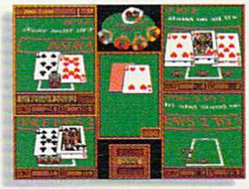
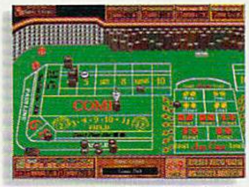

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TEST LAB

ARTS & LETTERS GRAPHICS EDITOR 3.12

Arts & Letters Graphics Editor 3.12
Minimum requirements: 386 PC, 2MB RAM (4MB recommended)
Suggested retail price: $695.00; $29.95 for Jurassic Art

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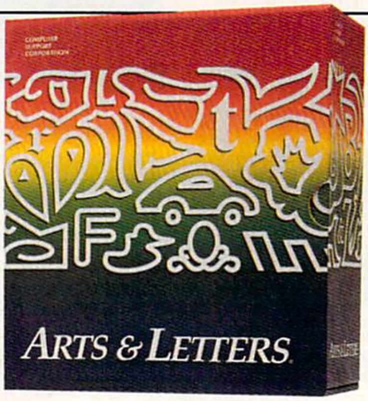
Dallas, TX 75244
(214) 661-8960



Of the six full-featured Windows draw programs reviewed in this Test Lab, Graphics Editor is matched only by CorelDRAW! and Professional Draw in ease of use, overall friendliness, and number of features designed to help the nonartist.

The program is built around a collection of 5000 superb clip art images. You can easily edit the images or incorporate them into drawings as is. You should find it simple, for example, to use parts of images, such as the state of California from one of the many maps of the USA. All you have to do is enter a number corresponding to that part of the drawing. The program allows you to store and catalog the images you draw in the same manner.

Easy to install, Graphics Editor includes an online manual with an automated "show me" option that demonstrates many of the program's features. However, you must install everything—all clip art and 81 proprietary fonts—in order for the program to run properly. Accordingly, the full installation requires about 12MB.

I found the tutorial to be one of the best I've used. It takes you from the basics to more complicated topics in an easy, friendly style. Even if you don't have much drawing savvy, you will be creating drawings in no time.

Graphics Editor provides an adequate data-driven feature for making charts and graphs. To create a chart, you enter data within the program or import information from spreadsheets.

The program also provides styles for automating repetitive tasks, such as assigning the same attribute to objects in several different drawings. You could, for example, use it to automatically turn a string of text into a logo.

A perspective/warp feature lets you manipulate text and objects in ways that would require much artistic talent otherwise. You can, for example, make objects appear to move into the distance, give them roller-coaster contours, and even wrap them around themselves.

Again, *easy* describes this program—right down to the levers (rather than text boxes) for adjusting the angles of gradients. And if you do have trouble, Computer Support furnishes free technical support. The technician I talked to was a little sketchy on some questions; he had to go off the line to get some answers. But at least he knew what he didn't know.

The absence of monitor calibration and prepress enhancements makes Graphics Editor less appropriate than some of the other draw programs for creating process-color separations. Also, you cannot import and export EPS files or several other kinds of files. Instead, you use a utility called Decipher to convert files to the appropriate format. This arrangement is somewhat inconvenient.

Screen redraws of blends, gradients, and warped elements are too slow. But a math coprocessor version (available free on request) is supposed to speed things up substantially. So if you have a coprocessor or a 486, this may not be a problem.

Graphics Editor is a strong program for nonartists who need to create images in a hurry. Much of the included clip art can be used right out of the box, with little or no modification.

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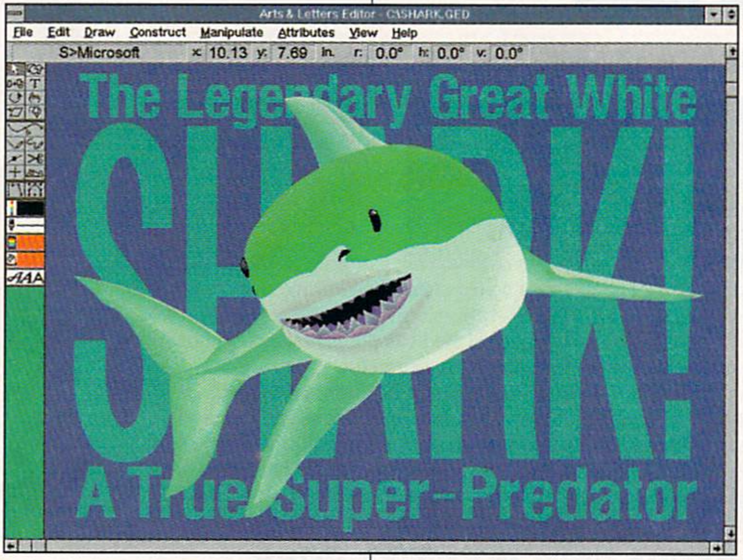
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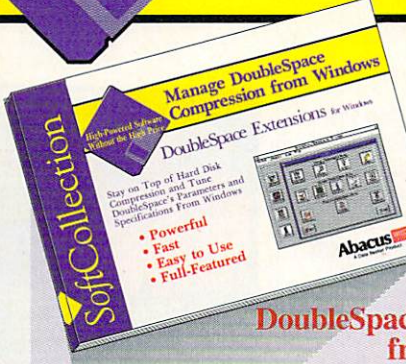
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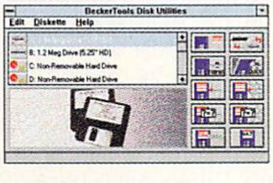
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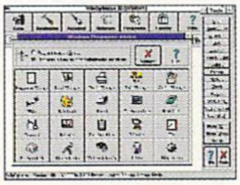

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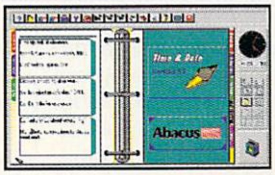
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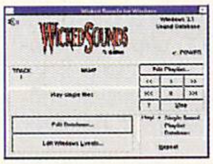
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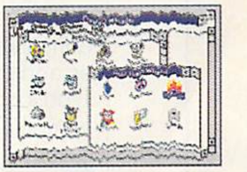

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CORELDRAW! 3.0 AND 4.0

CorelDRAW! is powerful enough for some professionals, yet it also has a wealth of features designed to help the nonartist.

Although the latest version of Corel's popular drawing product is version 4.0, the company is also selling version 3.0. In both packages you get a lot more than just a strong draw program. You get CorelCHART!, a highly sophisticated charting application; CorelPHOTO-PAINT!, a program for creating and editing bitmapped gray-scale and color images; CorelSHOW!, a slide and onscreen presentation program that supports limited animation; CorelMOSAIC!, a program for cataloging drawings and clip art; and CorelTRACE!, a program which turns bitmaps into vectors. Version 4.0 also contains an animation module, CorelMOVE!, for creating animated graphics for onscreen presentations.

And if all this isn't enough, with version 3.0 you get a CD-ROM containing 12,000 clip art images and over 250 Type 1 and TrueType fonts (the floppy version contains 4000 images and just over 150 fonts), and you get a great draw program to boot. Version 4.0 has two CD-ROMs containing over 18,000 pieces of clip art and clip media and 755 fonts.

CorelDRAW! 3.0 and 4.0
Minimum requirements: 386 PC, 4MB RAM (8MB recommended), VGA, mouse or graphics tablet, CD-ROM drive for CD-ROM elements
Suggested retail price: $199 for 3.0 (includes CD-ROM disc and floppy disks), $595 (includes CD-ROM discs and floppy disks)

COREL
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Ottawa, ON
Canada K1Z8R7
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A complete installation requires over 30MB of disk space; however, the installation program lets you load all or any part of the package. The draw program itself includes a spelling checker and thesaurus. Many options have "roll-up" menus that float in the editing area, allowing you to make changes to objects quickly. And when you aren't using these menus, you can roll them up into a title bar and use an arrange command to stack them neatly in corners of the drawing area.

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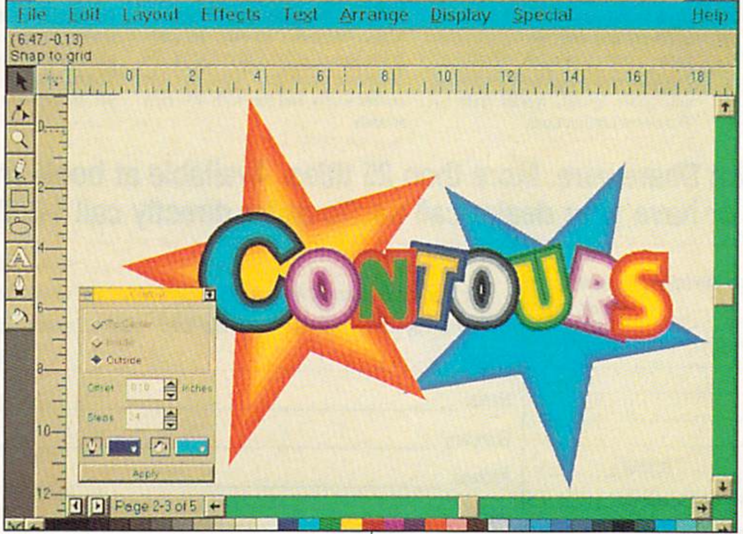

Extrusions, perspectives, blends, and many other features can be created and modified interactively with a mouse, rather than by entering values in dialog boxes, checking the results, and then going back to do it all over again. An interesting feature is the Rainbow option for blends. With it, instead of blending directly from one color to the other, you can reverse the blend on a color wheel and get a rainbow effect. In other words, if you choose two like colors, say light and dark blue, and blend them backwards, you'll get yellows, reds, purples, blues—hundreds of shades, depending on the number of blend steps you choose.

The differences between versions 3.0 and 4.0 are many, but not so extensive that you could not use version 3.0 for all your graphics needs. Version 4.0 supports multiple pages and has some page layout features not found in previous versions. You should look to version 4.0 if you want animation, OCR, and advanced prepress options, and if you want to save color separation configurations for future use. However, each package is a terrific value. While CorelDRAW!'s draw program itself is not necessarily stronger than some of the others reviewed here, the extras make it the best buy.

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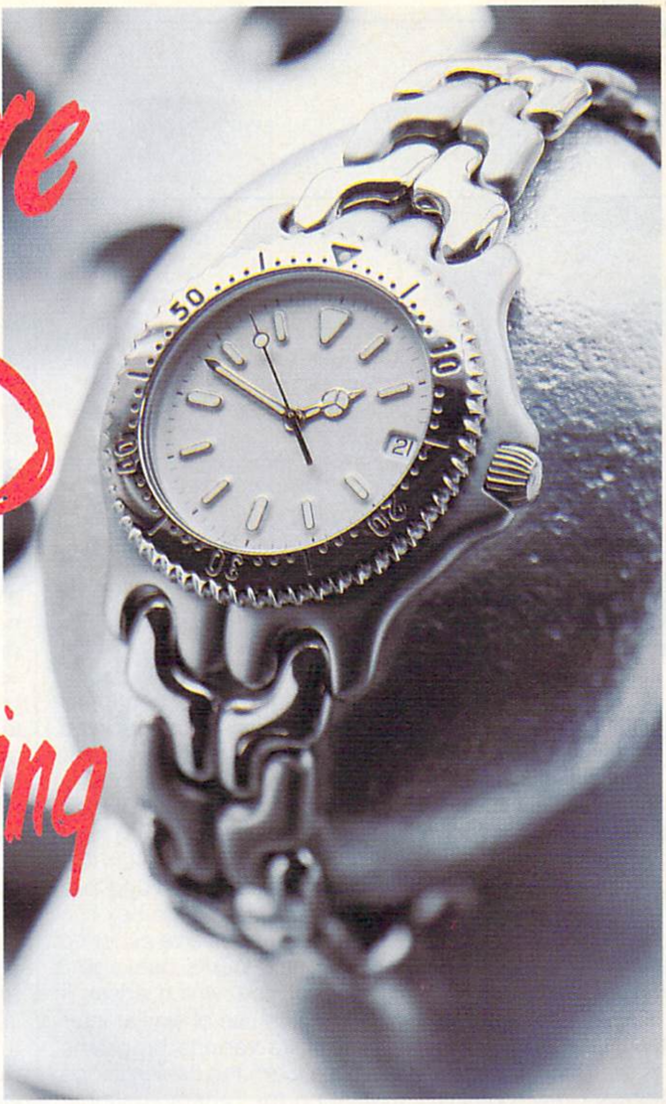

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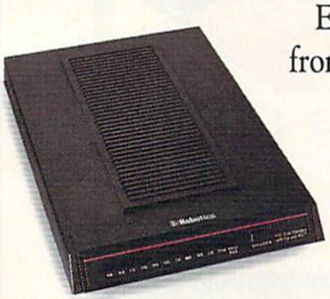

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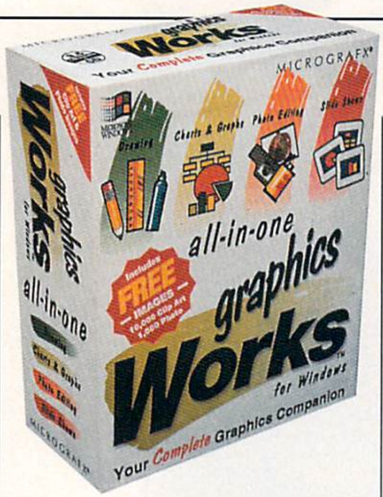
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Graphics Works 1.0
Minimum requirements: 386 PC, 4MB RAM, VGA (SVGA recommended), mouse; CD-ROM drive optional for some programs and images
Suggested retail price: $199

MICROGRAFX
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Richardson, TX 75081
(800) 676-3110
(214) 234-1769

GRAPHICS WORKS 1.0

Looking for ease of use? Then take a look at Graphics Works, built around Micrografx's popular, economical Windows Draw!, a relatively sophisticated vector draw program. Windows Draw! is a scaled-down version of Designer. You get about 80 percent of Designer's functionality for about 10 percent of the price.

Since Windows Draw! doesn't support color separations, trapping, and other commercial prepress options, it won't meet the needs of professional graphics artists, but it's great for most small business and home office settings—everything else you need to create sophisticated vector drawings is included. With Windows Draw! you can rotate, skew, fill, and manipulate Type 1 or TrueType fonts in every way imaginable, which makes this program great for creating logos and special effects.

The other applications in Graphics Works include PhotoMagic, a bitmap photograph editor; Windows OrgChart, for creating organization charts; WinChart, a charting and graphing program; and SlideShow, the standard slideshow module included with Micrografx's high-end draw and presentation packages, Designer and Charisma. There's also a clip art indexing and viewing utility for managing the 10,000 clip art images that come in the package, as well as a photo index and view utility for the 1000 photographs also included. However, to access the bulk of the clip art and photographs, you'll need a CD-ROM drive. (Both a CD-ROM and floppies are included in the box.)

The most impressive aspect of the Graphics Works package is its ease of use, which arises in part from the use of similar interfaces for its various programs. After you learn the basics in one, mastering the others is simple. And there's a Run command on the File menu in each application that lets you access the other Graphics Works applications with a mouse click.

I consider the 10,000 clip art images included on the CD-ROM some of the best available. (Actually, the clip art and the photographs are worth the product's purchase price. Just consider the graphics applications a bonus.) Micrografx has a strong reputation in the graphics industry for superb clip art. You will probably never have to look any further for a suitable image. The options are nearly limitless. There are well-drawn maps, complete with cities and other geographic information; terrific anatomy art; and a collection of business scenes and symbols to suit almost every imaginable situation. And when your documents or presentations call for photographs, surely one of the 1000 24-bit images of nature scenes, people, animals, and business situations will fill the need.

When you buy Graphics Works, you get Micrografx's great support program, which includes 24-hour service during the week and limited hours on weekends. The technicians are very well trained and courteous. This is a strong, easy-to-use draw program. The average small or home-based business can't miss with Graphics Works.

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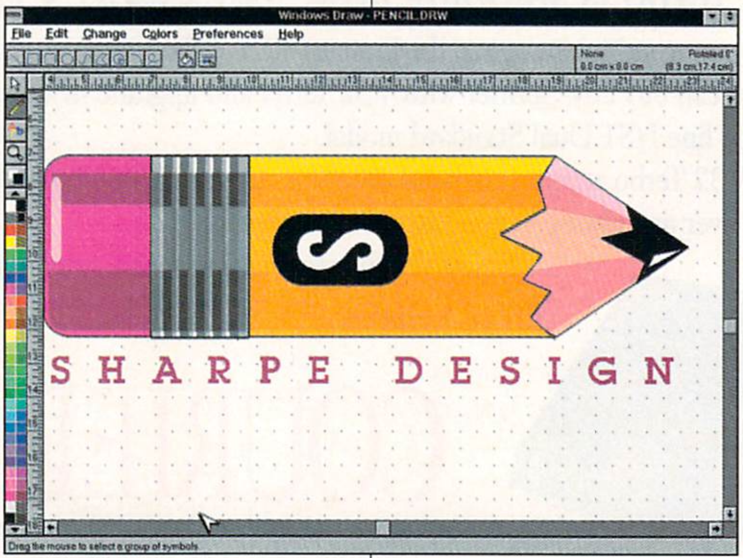

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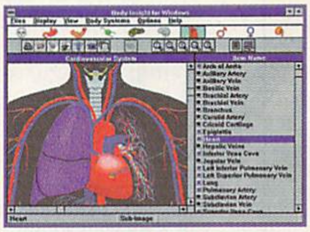

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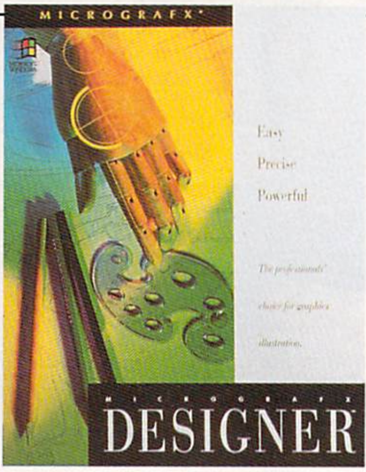
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MICROGRAFX DESIGNER 4.0

Designer targets technical illustrators, graphics artists, and designers, who care more about precision and performance than about a pretty interface. However, Designer's recently reworked interface provides ease of use along with very powerful features.

New features abound. There are so many, in fact, that choosing a few to talk about is difficult. In terms of technical enhancements, the most significant addition is a color separation utility that lets you separate not only Designer files but also any EPS graphic. With this feature, you can trap objects and perform undercolor removal (UCR), dot-gain correction, ink correction, and a myriad of other functions—all of which are prepress options necessary for top-quality reproduction at the print shop. And as with the new version of CorelDRAW!, you can save color separation configurations for future use. If you currently have to repeat the steps required to set up separations each time you print to your service bureau's imagesetter, you'll appreciate this feature.

Speaking of color, no longer must you order optional color palettes from Micrografx. Palettes for PANTONE, FocalTone, and TruMatch systems are provided, and you can create your own. You can also print spot-color separations.

Micrografx Designer 4.0
Minimum requirements: 386 PC, 4MB RAM (8MB recommended), VGA, mouse
Suggested retail price: $695

MICROGRAFX
1303 E. Arapaho Rd.
Richardson, TX 75081
(800) 676-3110
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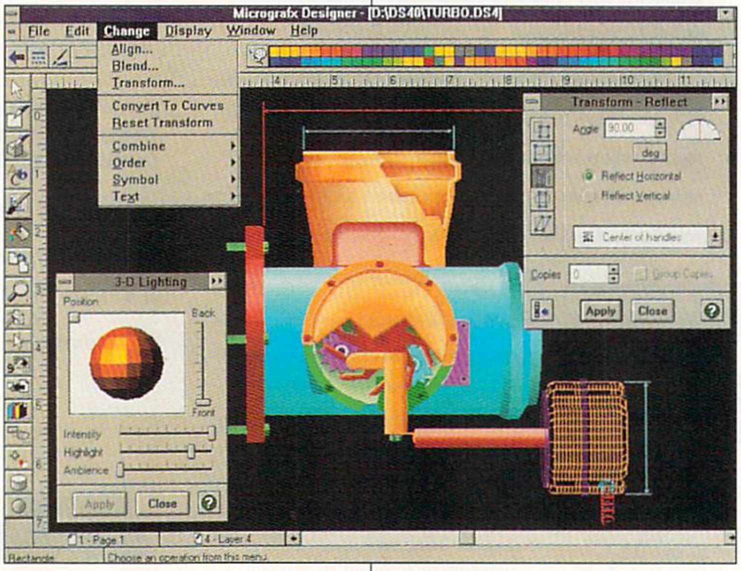
Designer has never had good automatic special-effects features—until this new version, that is. Before, to produce 3-D effects, such as extruded text or objects that look as though they fade off into the distance, you had to have the artistic knowledge and talent to create them. Even graphics artists find this a trial-and-error proposition. Now, creating 3-D objects is a snap with the features Extrude, Rotate, Scale, and Perspective. There's even a new control option that lets you adjust shading according to an imaginary light source. These options make Designer more accessible to the nonartist.

This year's draw programs have become amazingly adept at text handling, and Designer is no exception. You can pour text into frames of any shape, for some interesting effects, such as text that is contoured to fill a star shape and other forms. You can link text containers (or frames), a feature that's similar to jumping text from one page to another in a desktop publishing newsletter layout. (By the way, Designer now supports multiple pages.) The text-on-a-curve and wrap features are enhanced. There's a spelling checker, as well as automatic hyphenation, and no longer must you convert text to curves (an irreversible procedure that leaves text blocks uneditable) before applying gradients and other artistic effects (which means that the text remains editable).

You can perform these wonderful new options with one or all the 250 Type 1 or TrueType fonts shipped with the program.

Another useful addition to the Designer package is PhotoMagic, Micrografx's low-end bitmap editor. PhotoMagic is not a full-featured photograph editor, as is the CorelPHOTO-PAINT! module bundled with CorelDRAW! 3.0 and 4.0, but it does allow you to scan directly into the program and perform most bitmap-editing functions.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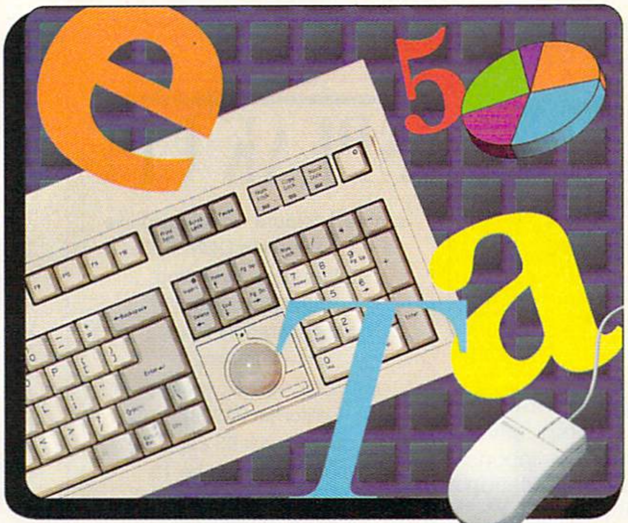
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☐ 405 DOS 6, Advanced
☐ 406 Intro to PC Computers

Database:
☐ 301 Access, Introduction
☐ 302 Access, Advanced
☐ 303 Fox Pro 2.5, Intro
☐ 304 Fox Pro 2.5, Adv
☐ 305 FoxPro WIN 2.5, Intro
☐ 306 FoxPro WIN 2.5, Adv
☐ 307 Paradox 4.0, Intro
☐ 308 Paradox 4.0, Adv
☐ 309 Paradox Windows, Intro
☐ 310 Paradox Windows, Adv
☐ 311 dBase IV, Introduction
☐ 312 dBase IV, Advanced
☐ 313 ACTI For Windows

Desktop Publishing:
☐ 501 Pagemaker 5.0, Intro
☐ 502 Pagemaker 5.0, Adv
☐ 503 Pagemaker 5.0, Secrets
☐ 504 CorelDraw 4.0, Intro
☐ 505 CorelDraw 4.0, Adv
☐ 506 CorelDraw 4.0, Integration

Presentation Graphics:
☐ 601 Harvard Gr 3.0, Intro
☐ 602 Harvard Gr 3.0, Adv
☐ 603 Harvard Gr WIN, Intro
☐ 604 Harvard Gr WIN, Adv
☐ 605 Powerpoint 3.0, Intro
☐ 606 Powerpoint 3.0, Adv
☐ 607 Freelance WIN, Intro
☐ 608 Freelance WIN, Adv

General Utility:
☐ 701 PC Virus, Prevention

Programming:
☐ 801 Programming in C
☐ 802 Programming in C++
☐ 803 Prog. in Visual Basic

NetWare:
☐ 901 NetWare 3, Installation
☐ 902 NetWare 3, Setup
☐ 903 NetWare 3, Admin.
☐ 904 NetWare 3, Volume 1
☐ 905 NetWare 3, Volume 2
☐ 906 NetWare 3, Volume 3

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levels of Undo and Redo. It's also an OLE (Object Linking and Embedding) client and server. You can create onscreen presentations and slides from drawings and use Designer to show your presentations, or you can use Designer as a stand-alone viewing utility that you can take on the road.

Designer is known for its precision, and version 4.0 lives up to that reputation. According to Micrografx, object placement is accurate to within one micron, and the program supports printer resolutions up to 24,600 dpi.

Not for the faint of heart, full-featured Designer is aimed squarely at the professional.

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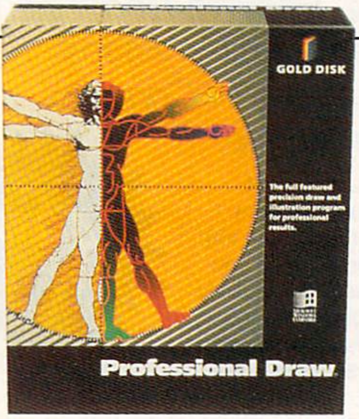
PROFESSIONAL DRAW 1.0


GOLD DISK
The full featured precision draw and illustration program for professional results.
Professional Draw

Professional Draw 1.0
Minimum requirements: 386 PC, 2MB RAM, VGA
Suggested retail price: $495

GOLD DISK
5155 Spectrum Way, Unit 5
Mississauga, ON
Canada L4W5A1
(800) 465-3375

At $495, Professional Draw costs less than many of the other programs reviewed here, and although it does not have all of the combined features of the applications in CorelDRAW!, overall it is at least as good as that program. Gold Disk is a strong company and makes great software. Professional Draw is no exception.

The program installs easily and lets you decide which files to load, including files for CorelDRAW! 2.*xx* WFN fonts, TrueType fonts, Professional Draw proprietary fonts, or the 150 Type 1 fonts that come with Professional Draw. In fact, Professional Draw is the only draw program here that can import CorelDRAW! 3.0's CDR format. It also sports many of CorelDRAW!'s automatic drawing features, such as Perspective, Extrude, and Envelope. It supports interactive mouse-manipulation and light-source adjustments, such as those found in CorelDRAW! and Designer. Radial graduated fills and light source can be adjusted with levers, rather than with obscure values in dialog boxes that make sense only to mathematicians.

A feature unique to Professional Draw is its extensive snap-to controls. You can place lines precisely—snapping to a corner, on a circle tangent, parallel to each other, perpendicular to each other, at center, and at midpoint.

But what really sets this program apart from CorelDRAW! 3.0 is its advanced printing options. From within the Print dialog box, you can set knockouts, traps, overprints, and many other options. Trap settings include choke and spread amounts for each color, whether spot or process. Halftone settings include control of dot shapes, ten of which are predefined or user-defined. You can set color brightness and contrast, color balance, gray-scale conversion, and posterization. Drawings can be converted to gray scale, spot colors, or process colors automatically, and you can invert them.

If all you need is a strong, easy-to-use, and moderately priced draw program, there is really no reason not to buy Professional Draw.

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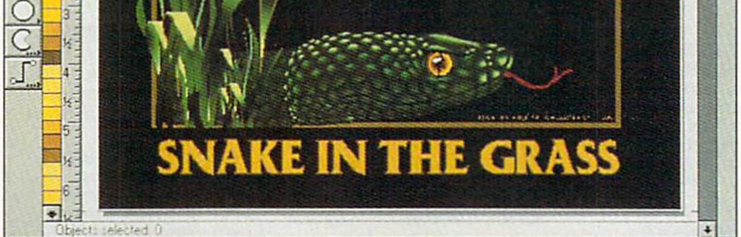
or older, and you must use
a touch-tone phone.



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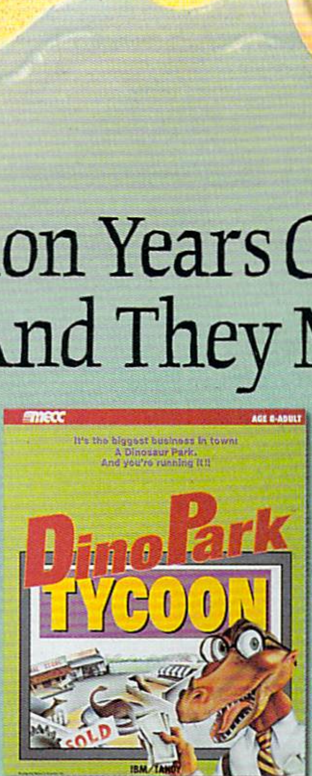
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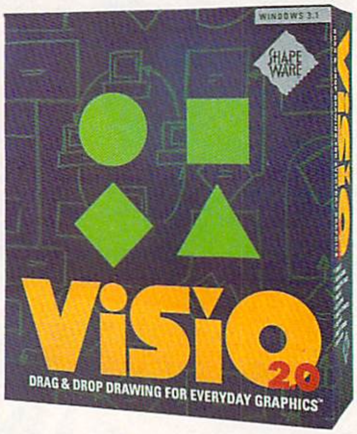
VISIO 2.0

Visio 2.0
Minimum requirements: 386 PC (20 MHz or faster), 4MB RAM, VGA
Suggested retail price: $129 through December 1993, then $299; $79 for upgrade from version 1.0

SHAPEWARE
1601 Fifth Ave., Ste. 800
Seattle, WA 98019
(800) 446-3335


WINDOWS 3.1
SHAPE WARE
VISIO
2.0
DRAG & DROP DRAWING FOR EVERYDAY GRAPHICS™

Visio's approach to drawing is entirely different from the approaches taken by other programs reviewed here. (IntelliDraw does, however, have many of Visio's drag-and-drop and smart-graphics features.) Instead of calling it a drawing program, the publisher (Shapeware Corporation) calls it shapeware. This product is designed for business users who don't know how to draw. The concept is that you create business drawings—floor plans, diagrams, flow charts, and so on—by combining predefined shapes. This approach, though somewhat limited, is very effective.

Shapeware calls Visio's approach drag-and-drop drawing. To create drawings, users drag predefined shapes from job-related stencils, or palettes of shapes, and drop them onto the drawing page. Simply by moving objects onto a page, you make your drawing come to life. I created a complicated organization chart in no time, without spending much time in the documentation.

Visio is OLE (Object Linking and Embedding) aware, which means that you can embed drawings in, and link them to, other applications, such as your PowerPoint presentations or PagePlus layouts. Text is integrated. All you do is select an object and start typing. The text is automatically centered in the object. You can create master shapes and copy them throughout your drawing; when you change the master, all copies are automatically updated (a feature known as cloning in some other programs).

Styles let you predefine frequently used formats, such as text attributes, line weights, fill patterns, and so on. Once a style is defined, all you do is change it to automatically update all other objects formatted with the same style. You can set your measurements system to inches and feet, metric units, or one of several other units.

The options Glue and AutoConnect allow you to draw a line between two shapes, then reposition them without breaking the connection. Connecting lines stretch, contract, and change angle perfectly when shapes are repositioned. The AutoConnect feature lets you connect objects automatically.

Visio performs its magic with shapes, or clip art, called SmartShapes. SmartShapes can assume different forms, colors, proportions, and other properties, depending on the context in which you use them. You can use them as Shapeware has defined them, or you can modify them to suit your needs. Each shape has its own spreadsheetlike form you can edit to modify its behavior.

Visio comes with several predefined shapes, and you can buy several themed collections from Shapeware. The collections include Marketing, Space Planning, Home Planning, and Landscape Planning, as well as several others. Or you can purchase a book that shows you how to develop your own Visio shapes.

Visio must be a popular product. I called technical support several times and had to wait for a long time on the line each time. However, when I did get through, my questions were answered clearly and courteously. I couldn't find a problem the technician couldn't solve.

If you need a program designed to help you create diagrams and flow charts, this is a good one.

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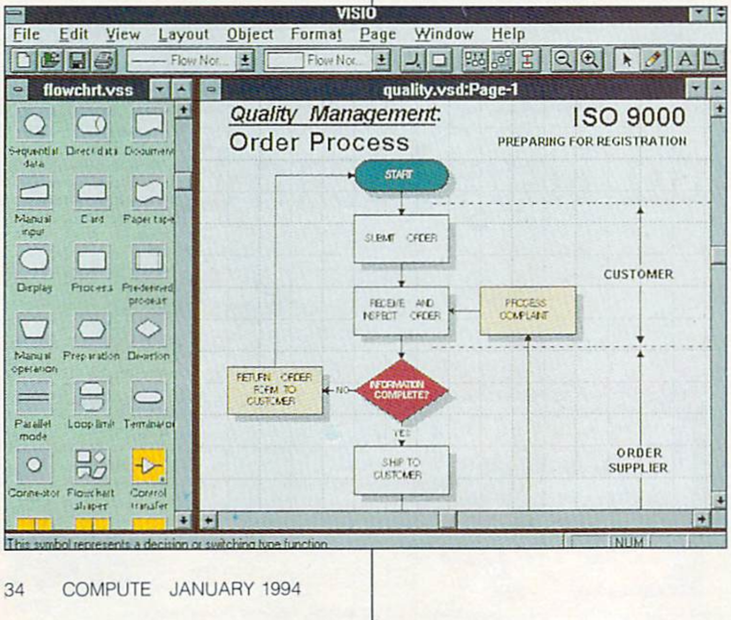
VISIO
File Edit View Layout Object Format Page Window Help
Flow Nor...
Flow Nor...
flowchrt.vss
Sequential data
Direct data
Document
Manual input
Card
Paper tape
Display
Process
Predefined process
Manual operation
Preparation
Decision
Parallel mode
Loop limit
Terminator
Connector
Flowchart shapes
Control transfer
quality.vsd:Page-1
Quality Management:
Order Process
ISO 9000
PREPARING FOR REGISTRATION
START
SUBMIT ORDER
RECEIVE AND INSPECT ORDER
PROCESS COMPLAINT
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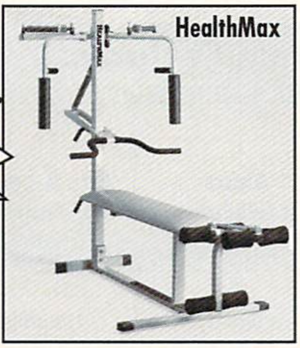

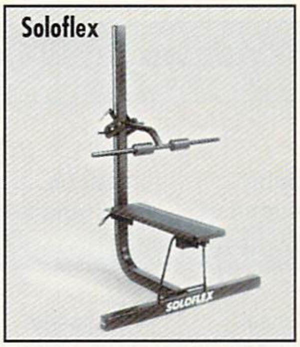

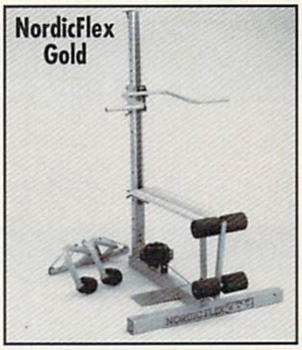

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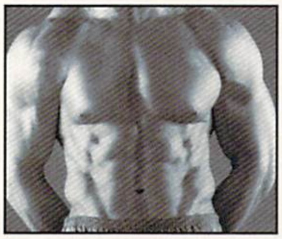
1	Low price	✓ YES $329 (plus $49 S/H)	✗ NO $995 (plus $105 S/H)	✗ NO $999 (plus $99 S/H)
2	Easy to use	✓ YES No assembly/disassembly required between exercises.	✗ NO Requires assembly/disassembly between exercises.	✗ NO Requires assembly/disassembly between exercises.
3	Leg Extension Unit included	✓ YES Permits both leg extensions and lying leg curls.	✗ NO Costs $200 extra.	✓ YES, **BUT...** Leg unit included doesn't permit lying leg curls.
4	Butterfly Unit included	✓ YES No extra cost.	✗ NO Costs $200 extra.	✓ YES, **BUT...** You must assemble before each use, and disassemble to use bench press.
5	Strength conditioning for all five major muscle groups	✓ YES **HEALTHMAX** strengthens all five: arms, legs, abdominals, back and pectorals.	✓ YES, **BUT...** You must purchase $400 in extra accessories to do comparable exercises for legs and pecs.	✓ YES, **BUT...** Why would you pay $700 more than **HEALTHMAX**?
6	Comfortable bench	✓ YES Padded bench is a full 47" long, 12" wide, and a comfortable 20" high.	✗ NO Padded bench is only 40½" long, making some lying down exercises awkward.	✗ NO Padded 40" bench is short, narrow (only 9" wide), and too high (24") off the ground.
7	Hydraulic cylinder resistance system	✓ YES Adjusts to your personal resistance level with a simple twist of a dial.	✗ NO Uses rubber bands which must be changed to vary resistance level.	✗ NO Uses complicated cord/pulley/mechanical resistance system.
8	Full refund of return freight if unit returned	✓ YES If not satisfied, we will refund your cost, shipping/handling charges, and all return freight!	✗ NO You pay over $85 to return. It must go by truck to Oregon!	✗ NO You pay about $65 to return by UPS.
9	Payable in installments	✓ YES 9 easy installments of just $36.56! ($49.00 S/H added to first installment.)	✓ YES, **BUT...** You pay $39 per month for the next *2 YEARS!*	✓ YES, **BUT...** At 4 payments of $250, each installment is almost as much as the total cost of a **HEALTHMAX**!



When you compare, the choice is easy...it's **HEALTHMAX**!

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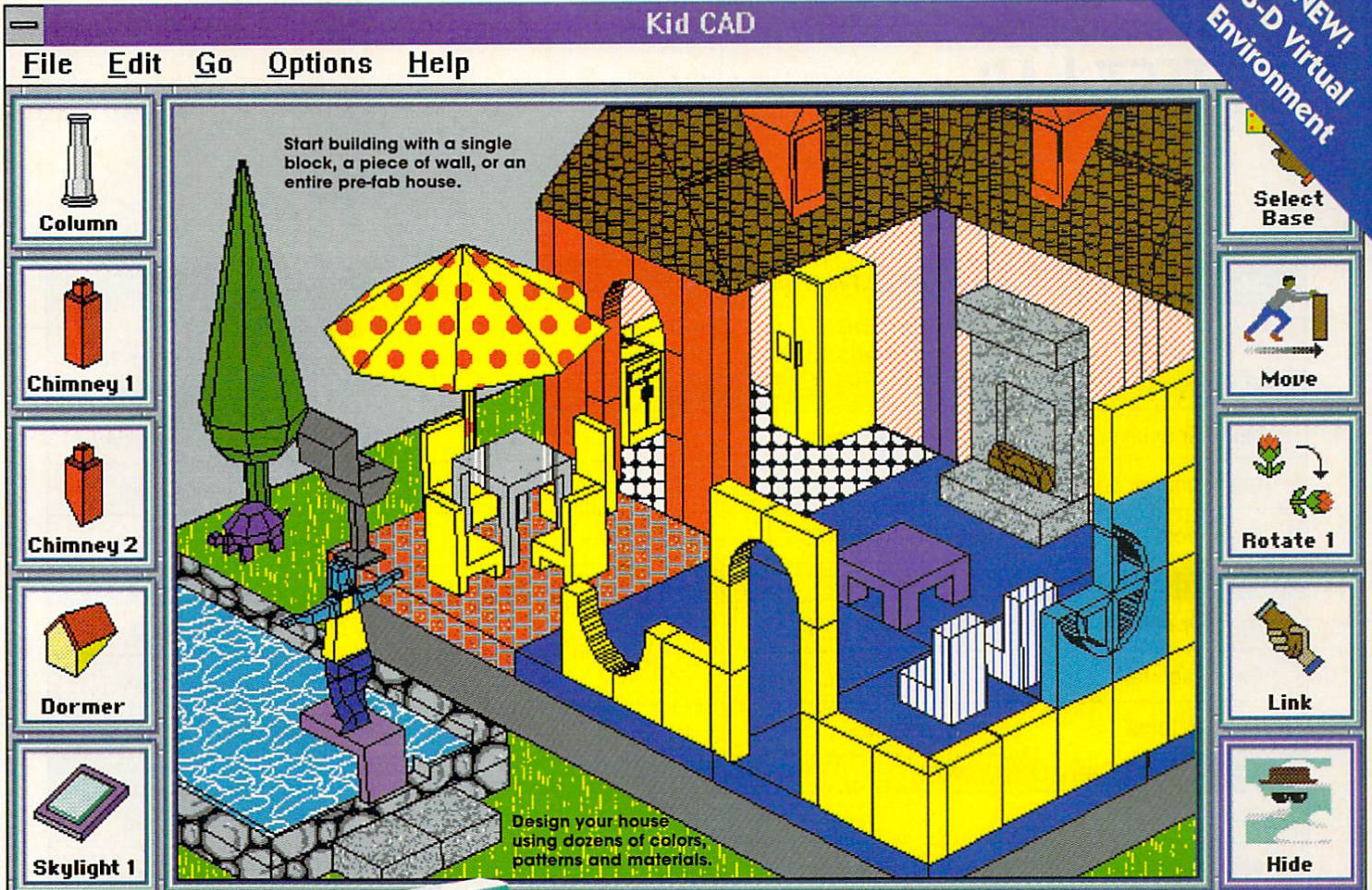
Windows Draw Program Features

	Adobe Illustrator 4.01	Aldus FreeHand 3.1	Aldus IntelliDraw	Arts & Letters Apprentice 1.2	Arts & Letters Graphics Editor 3.12
LAYERING					
Number of layers supported	unlimited	unlimited	unlimited	unlimited	unlimited
Layer control and locking	no	yes	yes	no	yes
Layer notations	no	yes	yes	no	no
TYPESETTING OPTIONS					
Number of fonts included	40	13	0	25	81
Paragraph text	yes	yes	yes	no	yes
Creates fonts	no	no	no	no	no
AUTOMATIC DRAWING FEATURES					
Charts and graphs	yes	no	yes	yes	yes
Imported fills	no	no	no	no	no
Extrude (3-D)	no	no	no	no	no
Perspective	no	no	no	no	yes
Macros	no	no	no	no	no
Styles	yes	yes	no	yes	yes
Number of undos	1	99	99	1	9
PRINTING OPTIONS					
Batch printing	no	no	no	no	no
Enhanced PostScript printing	yes	yes	no	no	no
Enhanced process-color separations	yes	yes	no	no	no
Monitor calibration	yes	yes	no	no	no
MISCELLANEOUS OPTIONS					
Number of multiple drawings	20	limited by memory	unlimited	1	1
PANTONE Matching System (PMS)	yes	yes	no	no	no
Focoltone color matching	yes	no	no	no	no
Cataloging of clip art and drawings	yes	no	no	yes	yes
Number of clip art images included	375	500+	650*	3000	5000

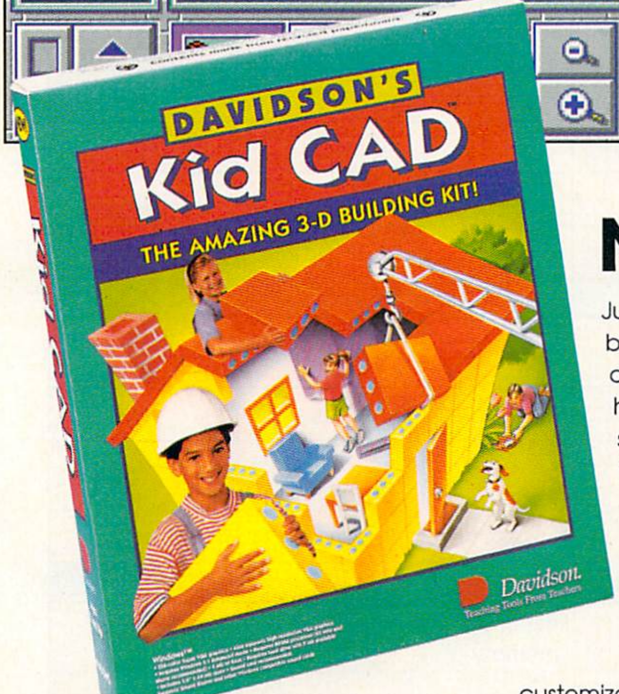
*Clip art is dynamic; changes shape as needed.

NEW! 3-D Virtual Environment


Kid CAD
File
Edit
Go
Options
Help
Column
Chimney 1
Chimney 2
Dormer
Skylight 1
Select Base
Move
Rotate 1
Link
Hide

Start building with a single block, a piece of wall, or an entire pre-fab house.

Design your house using dozens of colors, patterns and materials.


DAVIDSON'S
Kid CAD
THE AMAZING 3-D BUILDING KIT!
Davidson.
Teaching Tools From Teachers

Ages 7 and Up

No hard hat required!

Just grab your mouse and start building! This amazing 3-D design studio lets you create houses, forts, gazebos, and all sorts of structures with electronic building blocks that click into place. And with **Kid CAD**, building is only the beginning. You can paint and decorate everything in sight, including the kitchen sink! Then fill your customized creation with a huge assortment of people and pets, furniture and ferns—or even a dinosaur.

Kid CAD's 3-D Virtual Environment lets you change your perspective. View your house from the backyard or peek through the front door. With the simple click of a button you can zoom in or out, switch from a bird's-eye view to eye level, or circle around to see your house from a different angle.

Plus, **Kid CAD** is loaded with sensational sound effects that make building as fun as it sounds!

Suggested Retail Price:
$49.95 Windows

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Windows Draw Program Features

	CorelDRAW! 3.0 and 4.0	Graphics Works	Micrografx Designer 4.0	Professional Draw	Visio 2.0
LAYERING					
Number of layers supported	unlimited	unlimited	32,767	unlimited	unlimited
Layer control and locking	yes	no	yes	yes	yes
Layer notations	version 4.0	no	yes	no	yes
TYPESETTING OPTIONS					
Number of fonts included	200 and 755	32	289	150	0
Paragraph text	yes	no	yes	yes	yes
Creates fonts	yes	no	no	yes	no
AUTOMATIC DRAWING FEATURES					
Charts and graphs	yes	yes	no	no	yes
Imported fills	yes	no	yes	yes	no
Extrude (3-D)	yes	no	yes	yes	no
Perspective	yes	no	yes	yes	no
Macros	no	no	no	no	no
Styles	yes	no	yes	yes	yes
Number of undos	1 and 99	1	99	1	0
PRINTING OPTIONS					
Batch printing	with CorelSHOW!	no	yes	yes	no
Enhanced PostScript printing	yes	yes	yes	yes	no
Enhanced process-color separations	yes	no	yes	yes	no
Monitor calibration	yes	no	yes	no	no
MISCELLANEOUS OPTIONS					
Number of multiple drawings	1	1	limited by memory	unlimited	unlimited
PANTONE Matching System (PMS)	yes	no	yes	yes	no
Focoltone color matching	yes	no	yes	yes	no
Cataloging of clip art and drawings	yes	yes	yes	yes	yes
Number of clip art images included	18,000	11,000	13,740	1000+	2300

Give Your Joystick a Thrill.

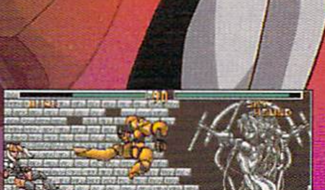
In the early 21st century, staged fighting has become a lucrative profession for female hardbodies, with dozens of legal arenas in the city. But for the leanest, meanest warriors, the real money comes from the illegal bouts held outside the city. It's the hottest day of the summer and you're baking inside a dilapidated warehouse. You — and your opponent — wear the latest in MECHA armor. The best fighting armor in the world.

METAL & LACE

THE BATTLE OF THE ROBO BABES

This won't be any picnic. With the intense heat and action, you'll both end up in less than full body dress.

It's dream babes in heavy armor battling for prize money — action packed, arcade style fun for your PC. But be warned — with its intense violence and voluptuous women, Metal & Lace: Battle Of The Robo Babes is for mature audiences only. And not for the faint hearted. Available now at your nearest dealer or call **1-800-258-MEGA.** Or write Megatech, P.O. Box 11333, Torrance, CA 90510. Visa, Mastercard, checks accepted.



System requirements: 286-20 or faster machine (386 recommended) with 640K RAM, hard disk, joystick recommended. Operating Sys.: MS DOS 3.3 or above, Windows 3.1. Graphics compatible with VGA. Sound support: Sound Blaster, Sound Blaster Pro, Thunder Board, Pro Audio Spectrum, Adlib Gold and Speed Master.

R This game is not for the faint-hearted. Contains violence and some material inappropriate for minors under 18.

For a free demo, call our 24hr. BBS at 310-539-7739. (8N1)

MEGATECH

Circle Reader Service Number 249

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NEWS & NOTES

Jill Champion Booth

Removable mass storage, mouse control, the future of taxes, and tactile feedback devices

Feel It Happen!

From Logitech comes the ultimate in 3-D realism and sensory immersion: CyberMan, an interactive, hand-held controller that dramatically improves your computer game-playing experience. CyberMan's design gives you tactile game feedback with full-motion, multidirectional game-playing control not possible with either a joystick or a mouse. A motor built into the controller allows you to actually feel various gaming events, such as being struck or bumping into a wall, synchronized with the game's sound and action. CyberMan is 100-percent compatible with existing Logitech mice, but to take advantage of the 3-D control and tactile feedback, you must use a special driver. Look for Access, Electronic Arts, Interplay Productions, Knowledge Adventure, Origin, Sierra On-Line, and a slew of other software companies to incorporate CyberMan's 3-D compatibility into their products this year. The suggested retail price is $129. Contact Logitech, 6505 Kaiser Drive, Fremont, California 94555; (510) 795-8500, (510) 792-8901 (fax).

Fast Travel Info

Whatever your vacation interests, from the Colorado mountains to the French Riviera, some country, state, or city tour operator or private group has probably put out a free brochure about your dream destination.

To help you get your hands on all those useful pamphlets, a company called Travel Companions has set up an electronic bulletin board listing more than 9500 travel brochures, maps, and information kits. Except for your own telephone charges, you can search the database free. The computer listings describe each pamphlet and give an address and phone number for ordering. For a $12 annual fee, you can order pamphlets electronically by simply marking the items you want. If you don't own a modem, you can get the information on disk for only $19. Contact Worldwide Brochures, 1227 Kenneth Street, Detroit Lakes, Minnesota 56501; (800) 852-6752, (218) 847-7090 (fax).

Flying Toasters for DOS

"For too long," says Wes Boyd, Berkeley Systems' CEO, "Mac and Windows users have had After Dark all to themselves. One hundred million DOS users worldwide were being deprived. Something had to be done about it, and we were just the company to do it." And what his company did was to create a DOS version of its top-selling After Dark screen saver. Now airborne appliances, aquatic fauna, whirlpools, shooting stars, playful kittens, and more than 30 other surrealistic displays are available for DOS screens everywhere. The suggested retail price for After Dark for DOS is $49.95. Contact Berkeley Systems, 2095 Rose Street, Berkeley, California 94709; (510) 540-5535, (510) 540-5630 (fax).

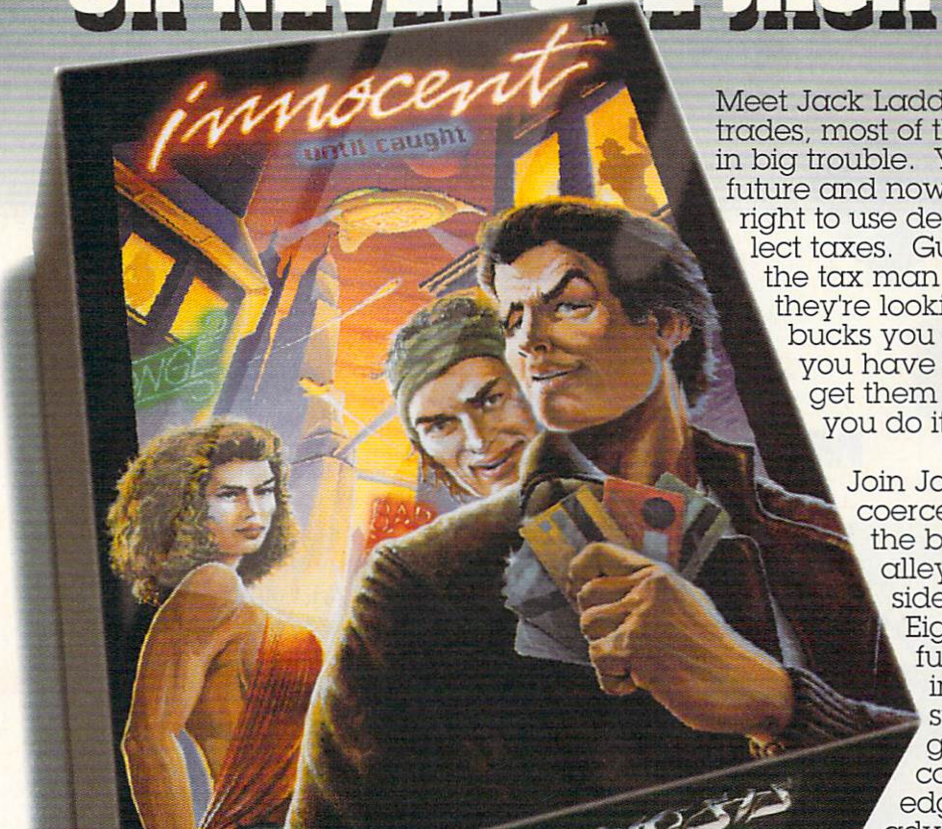
For Your Eyes Only

That Windows Solitaire screen is a dead giveaway that you're . . . uh . . . working "light" today. Or maybe you're the chief of personnel and you prefer not to broadcast confidential information while working in employees' personal files. So how do you protect your screen from all those prying eyes? ACCO's new SS Security Screen Filters are equipped with a film laminate that allows only a 15-degree viewing window. Onlookers see only a clouded view and are unable to read what's visible to you. In addition, the optical-quality glass used in the filters actually increases contrast more than 20 times and sharpens on-screen images—but for your eyes only. Suggested retail prices for the different models range from $149.95 to $189.95. Contact ACCO USA, 770 South ACCO Plaza, Wheeling, Illinois 60090-6070; (708) 541-9500, (708) 541-5821 (fax), (800) 247-1317 (toll-free fax, U.S. only).

Torture Yourself Early

Want to get a head start on knowing how much the new Clinton tax laws are going to sock it to you? TurboTax Tax Planner from ChipSoft will help you plan strategies to cope. The comprehensive forecasting and analysis program is designed to evaluate your tax liability across a broad variety of events like real-estate transactions, investments, and retirement. TurboTax Tax Planner analyzes different scenarios and presents results so you can easily understand their relative tax impact. In addition to incorporating any newly passed tax legislation, TurboTax Tax Planner features tax rates and brackets that ad-

SEE JACK RUN.
SEE JACK PLAY.
SEE JACK WHEEL.
SEE JACK DEAL.
SEE JACK STEAL.
SEE JACK PAY TAXES.
OR NEVER SEE JACK AGAIN.



Meet Jack Ladd, a jack of all trades, most of them illegal. Jack's in big trouble. You see this is the future and now the IRS has the right to use deadly force to collect taxes. Guess what Jack, the tax man commeth, and they're looking for the gazillion bucks you owe them. Now you have only 28 days to get them the money, how you do it is up to you.

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Curtis Manufacturing has a sleek new line of surge protectors that, according to the company, are technically superior to any others on the market. Each unit has been designed to deliver maximum performance with high joule ratings. The line starts with single-outlet protection at 140 joules and works up to eight-outlet maximum protection at 980 joules. In the company's independent tests, the model SP5000 at 196-V maximum suppression outperformed UL's best standard rating by 60 percent. The entire line is backed by a comprehensive warranty program: Curtis guarantees each surge protector and its performance by insuring the equipment that's plugged into it, and top-of-the-line models even cover damage to connected equipment caused by lightning strikes. Suggested retail prices range from $8.95 to $149.95. Contact Curtis Manufacturing, 30 Fitzgerald Drive, Jaffrey, New Hampshire 03452; (800) 955-5544 (U.S. only), (603) 532-4123.

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A True Font Library

Bitstream is offering its entire typeface library of nearly 1100 faces in TrueType format for Windows 3.1 operating environments. Larry Oppenberg, vice president of Type Operations, says he expects the Bitstream Typeface Library (BTL) in TrueType format for Windows 3.1 to appeal equally to a range of users, from individuals to businesses, such as desktop publishers, designers, graphic artists, and marketing communications departments. General target markets are small-office and home-office desktop publishing, business publishing, graphics companies, and graphic artists. Pricing per BTL format begins at $32.25. Contact Bitstream, 215 First Street, Cambridge, Massachusetts 02142-1270; (800) 522-3668, (617) 868-4732 (fax).

Mousetamer

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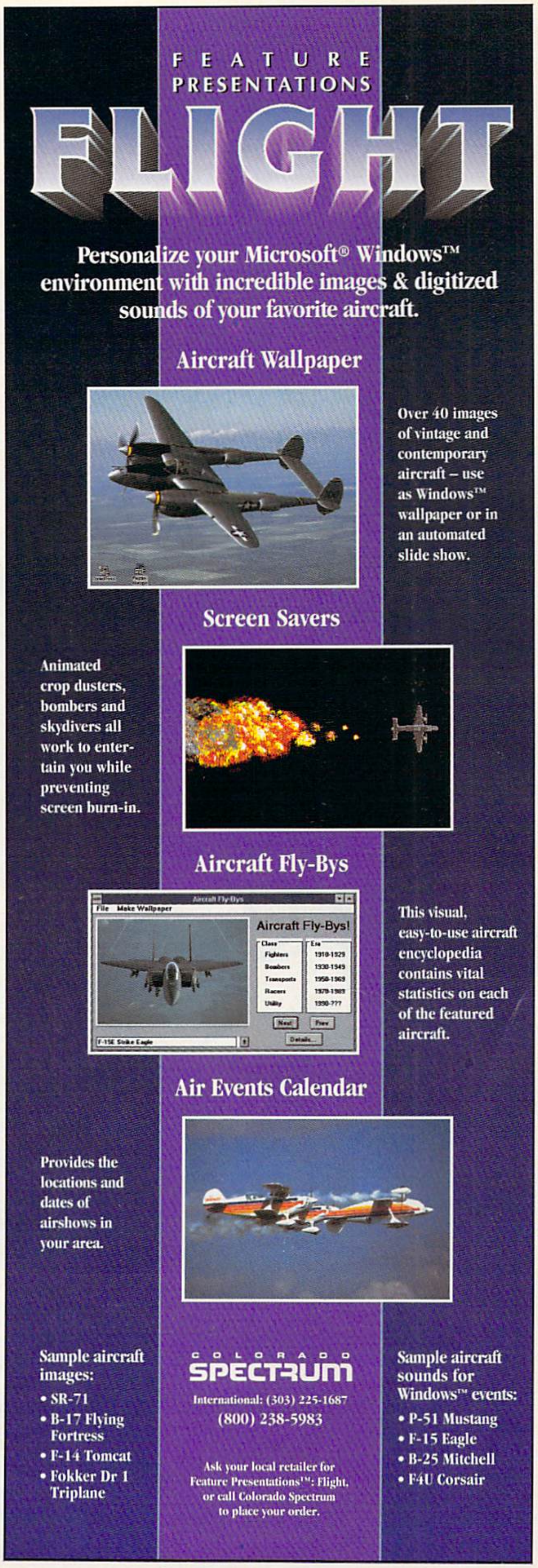

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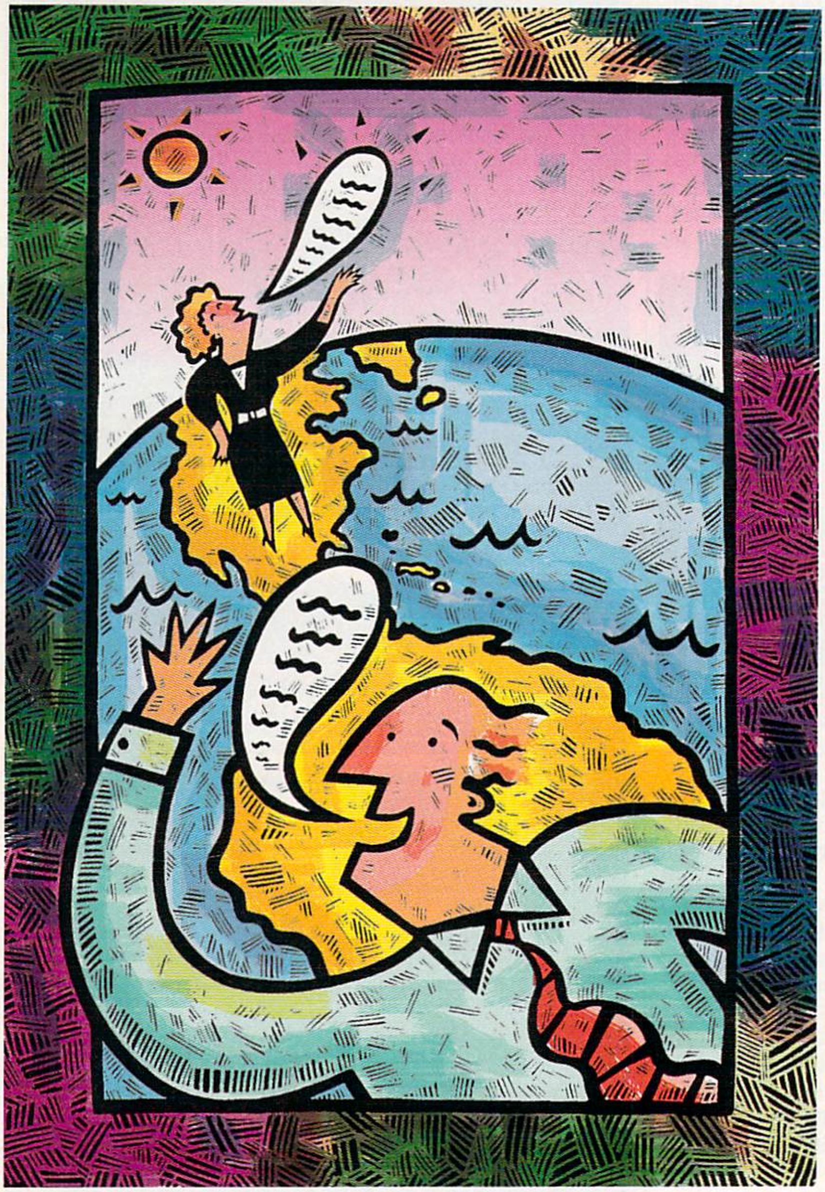

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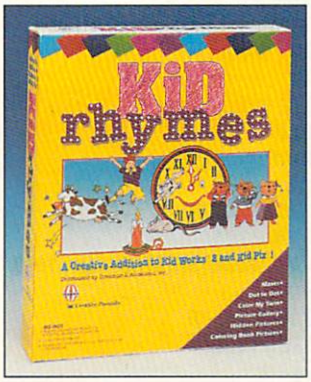
greater control of the mouse, and makes it feel like a wireless mouse—without the drawbacks of radio-frequency interference, loss of signal, slow cursor response, and loss of resolution.

At a suggested retail price of $4.95, the Mousetamer is a bargain. For more information, contact American Business Concepts, 4400 Sunbelt Drive, Dallas, Texas 75248; (214) 380-4422, (214) 407-9096 (fax).

Kid Rhymes

Creative Pursuits, a Los Angeles–based company that focuses on educational software, recently released Kid Rhymes, a companion product to Davidson & Associates' Kid Works 2 and Brøderbund's Kid Pix. Kid Rhymes has six activities that can be accessed through the Kid Works 2 or Kid Pix File menu. In Dot-to-Dot, kids create images from popular nursery rhymes; Coloring Book lets them color pictures on the computer screen or print them on paper; in Mazes, kids use problem-solving skills to help characters find their way; Picture Gallery lets them personalize predrawn pictures with their own colors; Hidden Pictures lets kids search for hidden objects in familiar nursery-rhyme scenes; and in Color My Twin, kids copy and color the patterns of a favorite nursery-rhyme character to create a symmetrical twin. Available in both DOS and Mac formats, Kid Rhymes' suggested retail price is $29.95. Contact Davidson & Associates, 19840 Pioneer Avenue, Torrance, California 90503; (310) 793-0600, (310) 793-0601 (fax).



Kid Rhymes makes for good times.

Removable Hard Drives

If you can't remember to make floppy backups or you don't want anyone to access your work, get a pocket-sized removable hard drive. A new line of drives from Logisys, called Intelligent Drives, allows you to remove or insert a hard drive cartridge without turning off your computer. Each Intelligent Drive system consists of an IDE controller card, a pocket-sized cartridge, and a bracket for 5¼- and 3½-inch drive bays. Logisys says the system uses the latest drive technology to ensure that the cartridge delivers the same performance as fixed IDE drives. Cartridges are available in capacities of 80MB, 135MB, 180MB, 260MB, and larger. The installation kit is $150; cartridges range from $399 to $599. Contact Logisys at 4749 East Wesley Drive, Anaheim, California 92806; (800) 333-5679, (714) 693-1188 (fax).

Freebies for Parents

Microsoft and the Computer Learning Foundation have developed a free booklet to help parents become familiar with multimedia personal computing. *The Power of Learning with Multimedia Personal Computing* introduces multimedia and explains how using a computer at home can sharpen key learning skills. Call (800) 426-9400 or write to Computer Learning Foundation, Attention: Multimedia Booklet, P.O. Box 60967, Palo Alto, California 94306.

Companies or public relations firms with items of interest for "News & Notes" should send information along with a color slide or color transparency to News & Notes, Attn: Jill Champion Booth, COMPUTE, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. ❐

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Mouse remains fully operational while gameport is in use.

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Supports joystick & rudder pedals simultaneously. No calibration, jumpers or manual speed adjustments necessary.

Circle Reader Service Number 223

FEEDBACK

Filling in the blanks, automating your PC's clock, and batching QBASIC from your AUTOEXEC.BAT

Abort, Delete, Retry

Because of a printing error, November's multimedia feature, titled "Open Windows to Sound," includes two incomplete paragraphs on page 80. The complete paragraphs are listed below.

"As if that weren't confusing enough, Windows throws another wrench into the works by combining MIDI with the FM synthesis associated in the DOS world with Ad Lib compatibility. If you don't actually have a MIDI device, Windows will let you map the General MIDI instruments to your sound card's FM chip. You can see this for yourself by calling up the MIDI Mapper utility through Windows' Control Device program. MIDI Mapper lets you specify which MIDI device will be associated with each of MIDI's 16 channels, which sound will be associated with each of Windows' 128 MIDI instruments, and which MIDI note will be associated with each MIDI drum sound.

"So what can you actually do with Windows audio? First, you can play back audio from the growing numbers of Windows programs that support sound. In addition to Windows games, such as Super Tetris, SimCity, Tesserae, and Cogito, you'll be able to use the many MPC programs on CD-ROM, including Brøderbund's Just Grandma and Me, Microsoft Encarta, Microsoft Cinemania, Compton's NewMedia's Jazz: A Multimedia History, The New Grolier Multimedia Encyclopedia, and hundreds of other Windows-based multimedia applications. You'll be able to capture and play back software-based video files using Video for Windows and QuickTime for Windows. And you'll be able to add audio to your presentations, with programs such as Action! and Compel."

Saving Time

Why don't computer makers build into the ROM a program that sets the system clock when daylight saving time goes into effect and again when we return to regular time?

RAY METZGER
LEHIGH ACRES, FL

One of the dangers of the computer age is that we'll become dependent on our computers for everything. In order to forestall this, computer companies got together in secret to form a cabal that will ensure that we continue to maintain that frontier spirit—the spirit that helps us to survive in the face of adversity. This Star Chamber decided to make every computer user reset the system clock at least twice a year.

We've written a little program that you can run from your AUTOEXEC.BAT to set your system clock ahead in the spring and back in the fall. Is it simpler than changing the clock? No. You see, we're also members of the cabal.

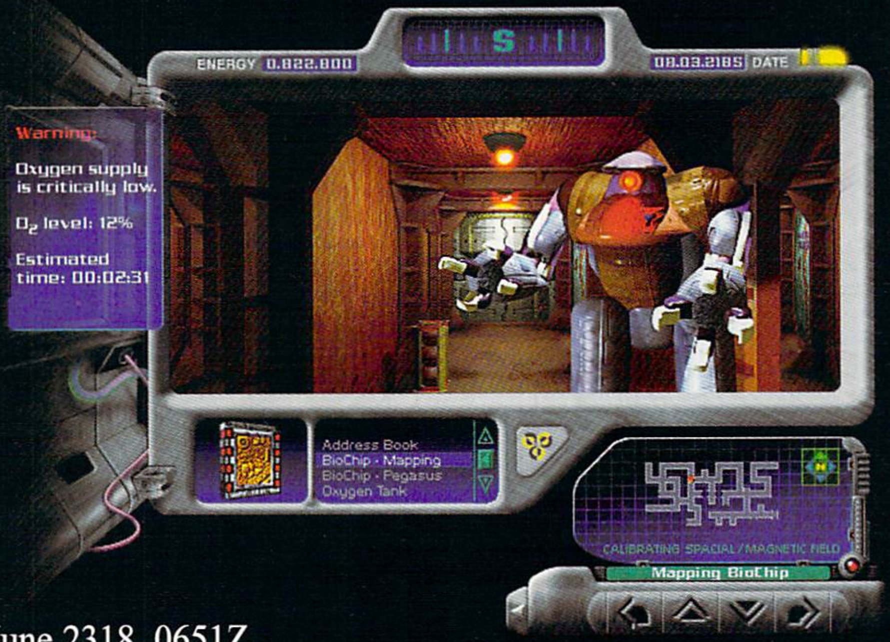
Seriously, not everyone uses daylight saving time, so for millions of users such a utility would be more of a problem than a solution.

Here's the DST.BAS program.

```
currentdate$ = RIGHT$(DATE$, 4)
 + LEFT$(DATE$, 2) +
 MID$(DATE$, 4, 2)
ON ERROR GOTO errorchecker
OPEN “\timetemp.hhh” FOR
 INPUT AS #1
CLOSE
IF LEFT$(DATE$, 2) >= “04” AND
 LEFT$(DATE$, 2) < “10” THEN
i = VAL(RIGHT$(DATE$, 4)) - 1993
s = 4: j = i
DO WHILE j > 0
GOSUB back1
j = j - 1
LOOP
IF (i + 1) / 4 = INT((i + 1) / 4) THEN
 GOSUB back1
s$ = “0” + RIGHT$(STR$(s), 1)
springforward$ = RIGHT$(DATE$,
 4) + “04” + s$
IF (currentdate$ > springforward$)
 OR ((currentdate$ =
 springforward$) AND
 (LEFT$(TIME$, 2)
 >= “02”)) THEN
OPEN “\timetemp.hhh” FOR
 INPUT AS #1
LINE INPUT #1, a$
CLOSE #1
IF a$ >= springforward$ THEN
GOTO ender
ELSE
GOTO changetime
END IF
END IF
ELSE
IF LEFT$(DATE$, 2) >= “10”
 THEN
i = VAL(RIGHT$(DATE$, 4)) - 1993
s = 31: j = i
DO WHILE j > 0
GOSUB back2
j = j - 1
LOOP
IF (i + 1) / 4 = INT((i + 1) / 4) THEN
 GOSUB back2
s$ = RIGHT$(STR$(s), 2)
fallback$ = RIGHT$(DATE$, 4) +
 “10” + s$
IF (currentdate$ > fallback$) OR
 ((currentdate$ = fallback$) AND
 (LEFT$(TIME$, 2) >= “02”))
 THEN
OPEN “\timetemp.hhh” FOR
 INPUT AS #1
LINE INPUT #1, a$
CLOSE #1
IF a$ >= fallback$ THEN
GOTO ender
ELSE
GOTO changetime
END IF
END IF
END IF
END IF
GOTO ender
changetime:
a$ = TIME$
a = VAL(LEFT$(a$, 2)): b$ =
 RIGHT$(a$,
 6)
a = a + (MID$(currentdate$, 5, 2)
 >= “10”) - ((MID$(currentdate$,
 5, 2) >= “04”) AND
 (MID$(currentdate$, 5, 2) <
 “10”))
```

The World's First Photorealistic Interactive CD Sci-Fi Adventure

THE JOURNEYMAN PROJECT


ENERGY 0.822.800
08.03.2185 DATE
Warning:

Oxygen supply is critically low.

O$_2$ level: 12%

Estimated time: 00:02:31

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BioChip - Mapping
BioChip - Pegasus
Oxygen Tank
CALIBRATING SPACIAL/MAGNETIC FIELD
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Winner!

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Mark Rhodes, Multimedia Editor, **Micropublishing News**

6 June 2318, 0651Z.

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PRESTO STUDIOS

QUADRA INTERACTIVE

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Come on down to Jack Daniel's someday and watch us make our smooth sippin' whiskey.

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For the charcoal that mellows our Tennessee Whiskey, we'll only burn hard maple taken from high ground. Anything else is too soft and would just go to ash. (Jack Bateman here is weeding out a stack of creek maple.) A new man in our rickyard must learn many skills before we bring him on. But first is knowing what wood makes the whiskey. And what wood makes the fire you sip the whiskey by.

SMOOTH SIPPIN'
TENNESSEE WHISKEY

JACK DANIEL'S
OLD TIME
Old No. 7
BRAND
Tennessee
SOUR MASH
WHISKEY
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Circle Reader Service Number 186

```
a = -(a + (-24 * (a = -1))) * (a
 <>24)
TIME$ = RIGHT$(STR$(a),
 LEN(STR$(a)) - 1) + b$
GOSUB maketimetemp
PRINT "System clock changed."
ender:
PRINT DATE$, TIME$
SYSTEM
errorchecker:
GOSUB maketimetemp
RESUME NEXT
back1:
s = s - 1
IF s < 1 THEN s = 7
RETURN
back2:
s = s - 1
IF s < 25 THEN s = 31
RETURN
maketimetemp:
OPEN "\timetemp.hhh" FOR
 OUTPUT AS #1
PRINT #1, currentdate$
CLOSE 1
RETURN
```

Auto Execute

Is there a way to get a QBASIC program to run from my AUTOEXEC.BAT?

ROBERT TOMLINSON
MESQUITE, TX

Yes. First, place the command SYSTEM at the end of the QBASIC program so that you'll exit from it when it's completed. Otherwise, when the program is finished, you'll be left sitting in QBASIC. Make sure the directory containing QBASIC is in your path. Then place the command to run the program within your AUTOEXEC.BAT. Say your program was called DST.BAS. To run it, place this line in your AUTOEXEC.BAT.

```
QBASIC /RUN DST
```

Do you have a question about hardware or software? Or have you discovered something that could help other PC users? If so, we want to hear from you. Call our special "Feedback" line: (900) 884-8681, extension 7010201 (sponsored by Pure Entertainment, P.O. Box 186, Hollywood, California 90078). The call will cost 95 cents per minute, you must be 18 or older, and you must use a touch-tone phone. Or you can write to "Feedback" in care of this magazine. Readers whose calls or letters appear in "Feedback" will receive a free COMPUTE baseball cap while supplies last. We regret that we cannot provide personal replies to technical questions. ☐

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ENTERTAINMENT SOFTWARE

THE BEST IN ARCADE GAME SOFTWARE

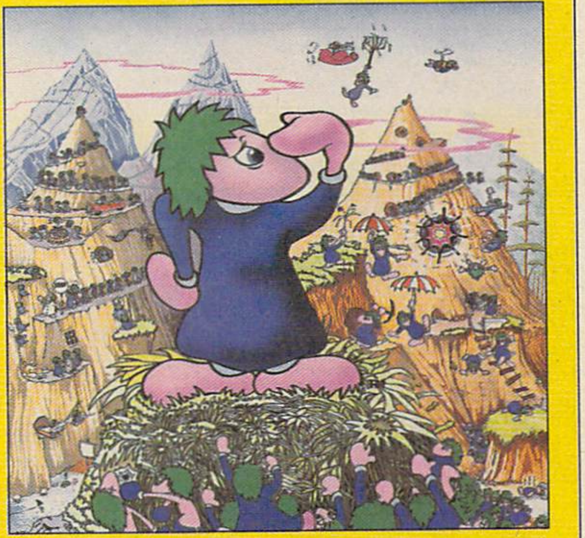
Historically, arcade games have never been the PC's long suit. Lacking the custom graphic coprocessors of its competitors—from the humble C64 to the more advanced Amiga and Atari ST—the PC simply couldn't cut it. So while others enjoyed a deluge of cutting-edge action games, the stodgy old PC held firm to its standing as an artless business computer.

Things certainly have changed. The once-dull PC now bursts with power—dynamic sound, graphics, and precision input devices. Consequently, for the first time, arcade games are hot on the PC. As if making up for lost time, designers and players are attacking the genre with a passion. Although the overall selection remains small compared to other systems, the floodgates are now open.

Hint: Traditional analog joysticks may be great for flight simulations, but they make lousy arcade controllers. Serious action players should invest in the four-button Gravis PC GamePad (Advanced Gravis, 604-431-5020, $29.95), a marvelous short-throw, console-style controller made especially for arcade games.

Arcade games generally fall into the following categories: Platform (run and jump), Shoot-em-Ups, Maze, Puzzle, and Classic (traditional games, such as pinball, adapted for the computer). Many designers, however, find ingenious ways to meld one or more categories—combining, for example, platforms with puzzles.

A perfect example of this melding of one category with another is Wolfenstein 3-D (Apogee, 800-426-3123, $50), which combines first-person maze running with nonstop shoot-em-up action. Players assume the role of a Schwarzenegger-style World War II prisoner attempting to escape a heavily guarded Nazi castle. Self-rated PC, for Profound Carnage, the game skyrocketed to cult status on the strength of its lightning speed, outrageous sound effects, and heart-pounding action. The full game features six individual episodes, each containing nine or more convoluted castle levels. The designers, Id Software, have followed this success with Doom, a game that features more involved play mechanics and dazzling graphic effects.



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In the mood for some intense arcade aerobics? Prepare for a fast-paced workout with The Lost Vikings (Interplay, 800-969-4263, $39.95). Take control of three well-meaning, but slightly dense, Viking warriors on a mad romp through time and space. The game's unique challenge involves alternating control between the three lead characters, each of whom possesses a special ability. You'll need a thoughtful, well-timed group effort to survive the game's 37 large, puzzle-filled levels. The graphics are bright, colorful, and detailed.

Few titles have put a more lively spring in the step of platform games than Jordan Mechner's Prince of Persia (Brøderbund, 800-521-6263, $29.95). Loosely based on the Arabian Nights adventure, your goal is to rescue the Princess, held captive 12 levels above you in the Sultan's castle. Widely considered a milestone in

ENTERTAINMENT SOFTWARE

the genre, this game provides a stunning showcase of rotoscoped animation, featuring incredibly fluid and lifelike character animation. Acrophobics beware: Much of the platform action in this remarkably physical game takes place at perilous heights, guaranteed to induce sweaty palms and queasy stomachs.

Brøderbund recently released Mechner's long-awaited sequel, Prince of Persia 2: The Shadow and the Flame ($49.95). The new title features 15 extra-large levels with a wider variety of settings and obstacles, vastly improved graphics, and an almost merciless array of opponents. Both games should be considered standard equipment for serious arcade players.

No doubt inspired by Mechner's work, French developer Delphine Software uses rotoscoped animation with even greater success in its phenomenal arcade adventure, Flashback (Strategic Simulations, 800-245-4525, $49.95). This futuristic thriller combines intense arcade athleticism with explosive firepower and mind-bending puzzles, spread out among six huge, diversely entertaining levels. Both background and foreground graphics are excellent—highlighted by film-quality animation— and expertly blended with atmospheric sound effects and cinematic transitions. Fans of this game also should check out Delphine's previous ground breaker, Out of This World (Interplay, $29.95).

Other exceptional platform games with a strong puzzle flair include the wildly popular Lemmings and Lemmings 2: The Tribe (Psygnosis, 800-438-7794, $29.99 and $59.99, respectively). The object of both games is to guide tiny green-haired, half-witted creatures across dangerous terrain to the exit door. What sounds simple in theory, however, proves absolutely maddening in practice, requiring steady nerves, quick reactions, and surprisingly sophisticated real-time strategy. The original game boasts 80 one-player and 40 two-player levels, arranged in difficulty from Easy to Mayhem. Lemmings 2 expands this premise dramatically, dividing its 120 levels among 12 unique Lemming tribes. The little guys also are given much more to do—with 55 different skills ranging from archers to surfers—as well as a wild assortment of precarious, often surreal obstacles. The sequel offers improved sound and graphics, although the original remains eminently playable.

Those looking for more edge-of-your-seat, gut-level gratification should try their trigger fingers on the growing number of high-octane shoot-em-ups. Firmly entrenched at the top of the list is Wing Commander Deluxe Edition (Origin, 800-245-4525, $79.95), Chris Robert's legendary space combat game. Structured around a branching, cinematic storyline, your pilot skills are put to the test in a series of increasingly dangerous deep space missions. The key to the game's success is the ferocious action scenes, featuring in-your-face 3-D dogfights, exploding with fiery bitmapped graphics and script digitized sound.

The game's outstanding sales have prompted several add-on mission disks, as well as the newly released Wing Commander Academy ($49.95). This latest stand-alone game forgoes the original's fancy theatrics to offer nothing but pure adrenaline-pumping action.

TOP 10 ARCADE GAMES

Lemmings 2. A wild and wacky 120-level puzzler, featuring sound and graphics enhanced from the best-selling original.

The Lost Vikings. True arcade-quality graphics highlight this fast and funny multilevel contest.

Flashback. A mind-bending adventure sparked by brilliant rotoscoped animation, this one points the PC in a bold new direction.

Prince of Persia 2: The Shadow and the Flame. Improved graphics and tougher opponents mark this long-awaited sequel.

Wolfenstein 3-D. A runaway hit noted for its blazing speed and ultraviolent action, often imitated, but rarely equaled.

D/Generation. Unassuming and often overlooked, this one's a nail-biter.

Wing Commander. Dynamic space combat wrapped around a cinematic storyline, this one started the current 3-D action craze.

S.C.OUT. Another low-profile action puzzler with an incredible built-in construction kit.

Stunts. Auto racing with a wild and wicked twist, featuring a terrific built-in track editor.

Super Tetris. The best rendition yet of the world-famous computer classic.

Another popular blending of styles combines shooting action and puzzle solving in an overhead maze setting. One of the most entertaining in this category is D/Generation (The Software Toolworks, 415-883-3000, $24.95), a riveting race through 10 levels of a mutant-infested office building. Nothing is as it seems—don't even trust the furniture—in this brilliant 1991 release. On a more abstract, pure arcade level, S.C.OUT (Inline Design, 203-435-4995, $59.95) captures the imagination with its finger-numbing action and intricate puzzles. The game boasts 101 huge 4-way scrolling levels, with a built-in—yet curiously undocumented—game editor, which allows players to create up to 999 diabolical levels. Graphics, sound effects, and player controls are all superb.

When you feel the need for speed, strap yourself into Stunts (Brøderbund, $19.95), perhaps the best arcade-style racing simulation ever made. From gut-wrenching loops to elevated jumps, this one's a full-tilt screamer on even marginally equipped systems, with amazingly responsive joystick control. The game's easy-to-use track construction kit—with user-created tracks available on most major online services—assures almost limitless high-octane fun.

If you enjoy vibrant, challenging entertainment, but lack the twitchy wrist required by most action-oriented fare, check out Russia's gift to the gaming world, Tetris (Spectrum Holobyte, 800-695-4263, $19.95). Sure it's simple,

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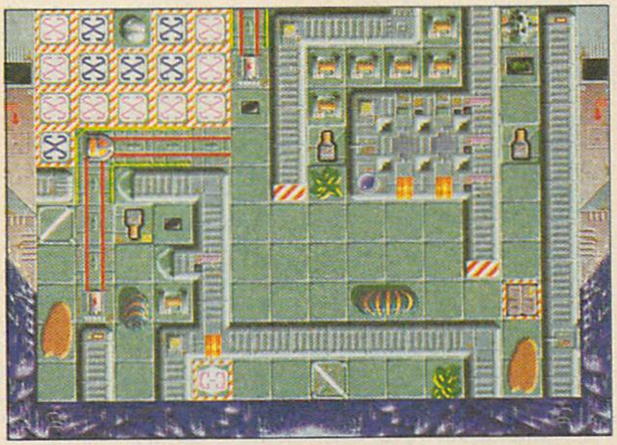
but try saying *no* to just one more game. Creating its own cottage industry, there are even several varieties to choose from: the VGA-enhanced Tetris Classic ($44.95); Tetris Trio ($49.95), combining Tetris, Welltris, and Faces; and the best of the lot, Super Tetris ($49.95), featuring greatly improved sound, graphics, and gameplay options. Other excellent visual puzzle games include Tinies (Inline Design, $59.95), Pipe Dream (LucasArts, 800-STARWARS, $19.95), and Ishido (Accolade, 800-245-7744, $24.95).

—Scott A. May

THE BEST IN SIMULATION GAME SOFTWARE

At their best, computer simulations should not only entertain, they should enlighten as well. As an interactive reflection of real-world activities, they allow ordinary people to experience extraordinary things. Let's face it, few of us will have the opportunity to pilot a real jet fighter, race the Indianapolis 500, or fly in a space shuttle. With a little imagination and a powerful PC, simulations allow anyone to do almost anything.

The overwhelming majority of titles in this genre are combat flight simulators—most directly based on real-life military aircraft, both modern and historical. It's not only one of the most prolific categories of entertainment software, but a proving ground for some of the industry's hottest design innovations. Just as early test pilots pushed the envelope of man and machine, flight sims continually test the boundaries of today's powerful PCs.



Inline Design's S.C.OUT

The field is so crowded with high-quality products, it's nearly impossible to narrow the selection. We'll begin with some of the established classics, particularly those best suited for rookie pilots. Almost four years old, but still flying high, Damon Slye's Red Baron (Dynamix, 800-326-6654, $49.90) remains one of the genre's top picks. Test your skills in the skies of World War I Europe—on both the British and German sides—flying such vintage fighters as the Sopwith Camel, Fokker Eindecker, and Nieuport 17. If you're looking for realistic dogfight action, you can't get much better than this, squaring off against some of history's best, including Max Immelmann, Eddie Rickenbacker, Oswald Boelcke, and the Red Baron himself, Manfred von Richthofen. Also featured are dozens of single missions, historical scenarios, and full campaigns, augmented with one of the genre's most versatile flight recorders. The game now comes packaged with the Red Baron Mission Builder, which adds untold enjoyment to this award-winning classic.

For dogfights of the modern era, you can't get much better than Chuck Yeager's Air Combat (Electronic Arts, 800-245-4525, $59.95). Like Red Baron, this one's a comparative old-timer, but one that still holds its own against the more flashy newcomers. A fighter pilot's dream, the game simulates a wide variety of aircraft from three combat eras: World War II, Korea, and Vietnam. Players assemble scenarios as you might order a meal from a Chinese menu—choosing an aircraft, starting altitude, and tactical position, as well as the opponent type, number, and skill. Select from more than 15 available aircraft, ranging from the P-47 Thunderbolt and B-29 Superfortress to the F-4 Phantom and MiG-21 Fishbed. The action explodes in a white-knuckle test of piloting prowess, weapons superiority, and split-second tactical skills. The program also features dozens of historic missions, a flight recorder, and wonderfully stable joystick controls.

An excellent choice for both beginning and intermediate dogfighters is Secret Weapons of the Luftwaffe (LucasArts, 415-721-3300, $49.95), the premiere World War II-era air combat sim. Take off as either an Allied or Axis pilot, commanding such classics as the P-47 Thunderbolt, P-51 Mustang, B-17 Flying Fortress, Messerschmitt Komet, Focke-Wulf 190, and experimental Gotha 229 fighter-bomber. A series of official supplement disks, as well as dozens of user-created hexed planes—available through various online services—adds even greater firepower. The game offers a wide scope of training flights, single missions, and full campaigns. One of its distinguishing marks is the use of bitmapped aircraft, instead of the usual polygon renderings, resulting in even greater detail, particularly images of planes trailing smoke and fire during close-range combat. Other highlights include terrific sound effects, from the vibrato engine hum and teeth-chattering explosions to the realistic Doppler drone of passing aircraft.

Yet another bona fide classic of the World War II era is Aces of the Pacific (Dynamix, $59.95), an award-winning combat sim from the creators of Red Baron. The sunny skies and blue water of the South Pacific provide stark contrast for this sensational aerial ballet of black smoke, bullets, and bombs. Hit the air in dozens of vintage U.S. and Japanese aircraft, including the Yokosuka D4YA Judy, Mitsubishi Zero, P-38 Lightning, P-39 Airacobra, and F4U Corsair. Structured similarly to Red Baron, the game features extensive training, single and historic missions, and numerous campaign options. Graphics and sound effects are state-of-the-art, with intensity levels heightened by the splendid flight recorder.

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Dynamix has followed this successful product with the equally impressive Aces Over Europe ($59.95).

Other air combat simulations, most suitable for intermediate pilots, include F-117A Nighthawk (MicroProse, 800-879-PLAY, $49.95), Knights of the Sky (MicroProse, $19.95), Comanche: Maximum Overkill (NovaLogic, 800-245-4525, $69.95), and Strike Commander (Origin, 800-245-4525, $79.95).

Those who feel they've earned their wings can try their luck in the upper echelon with Falcon 3.0 (Spectrum Holobyte, 800-695-GAME, $79.95), widely considered to be the best in the business. Packing the most realistic avionics of any PC combat sim, this is the closest most will come to piloting an F-16 without joining the Air Force. Some of the game's most outstanding features include full squadron-level command of up to eight fighter jets through a variety of single and campaign missions. Action erupts hot and heavy in such theaters of conflict as the Middle East and Central America, with more than 90,000 square miles of ground detail rendered in stunning 3-D contoured polygons. In addition to the computer opponent's remarkable artificial intelligence, you also can go head-to-head against a friend—flying the MiG-29—via null or remote modem link. Add-on mission disks include Operation Fighting Tiger (39.95) and MiG-29 ($59.95).

Even the most jaded fighter jocks will experience future shock in X-Wing (LucasArts, $69.95), the first full-fledged space combat simulator. Why putter with biplanes or jet fighters when you can warp out in X-, Y-, and A-Wing starfighters, armed to the teeth with laser canons and proton torpedoes? Engage in an increasingly difficult series of missions against the evil Empire, ranging from simple deep space recons to multiphase attacks on battle cruisers and star destroyers. It's a rip-roaring good time, but not for the easily frustrated. Both graphics and sound effects set new standards for the genre. A supplement disk, Imperial Pursuit ($29.95), is available.

Other advanced combat flight sims worth considering are Megafortress (Three-Sixty Pacific, 800-245-4525, $59.95), Gunship 2000 (MicroProse, $39.95), Tornado (Spectrum Holobyte, $79.95), and F-15 Strike Eagle III (MicroProse, $69.95).

Of course, there's more to flight simulation than blasting things to smithereens. The top straight flight simulator is without doubt Flight Simulator 5 (Microsoft, 800-426-9400, $64.95), the latest incarnation of an industry pioneer. Cosmetically, the game features a complete Super-VGA makeover, including digitized cockpit displays, texture-mapped terrain, dithering horizons, and eye-popping 3-D landmarks. The simulation also features new satellite navigation tools, more realistic weather, improved flight models, sampled sound effects, and a more useful flight recorder.

Stunt Island (Walt Disney Computer Software, 800-688-1520, $59.95) skillfully blends flight simulation and cinematography into one of the genre's most fascinating, utterly original creations. Designed for advanced, ambitious players, you'll don many hats in this one—stunt pilot, director, prop master, set designer, and film editor—as you assemble daredevil stunts on the world's largest fantasy backlot. Scout locations on the island's disparate terrain, from mountains and skyscrapers to farmland and urban sprawl. Choose from an amazing assortment of 45 aircraft, from World War I to modern-day, including such oddities as hang gliders and shuttles, all rendered in fast, beautifully shaded VGA polygons. Despite its diversity, each aspect of the game is integrated to offer a long-lasting, educational experience.

Coming back down to earth, the genre's few nonflight simulations deal with business-oriented resource management, although most are better classified as strategy games. Likewise, most driving games—such as the top pick here, MicroProse's World Circuit—are true simulations, but usually are categorized as sports.

—Scott A. May

TOP 10 SIMULATION GAMES

Stunt Island. A stunning combination of flight simulation and full-featured cinematography.

Red Baron. Though set in World War I, Damon Slye's masterpiece is the model for most modern air combat sims.

Chuck Yeager's Air Combat. Dogfight through three combat eras .

Falcon 3.0. The current champ among high-end combat flight simulations, with few challengers on the horizon.

Aces Over the Pacific. Easy to learn, but tough to put down, this one offers the widest appeal of any combat sim.

Secret Weapons of the Luftwaffe. Another historical powerhouse, filled with fast action and an explosive presentation.

X-Wing. Rooted in the Star Wars saga, this is the only space game good enough to qualify as a top-rated flight simulation.

Flight Simulator 5. The pioneer of civilian flight simulation gets a long-awaited facelift in this feature-packed update.

Megafortress. This high-tech, high-stress bomber simulation captures the multitasking intensity of modern warfare.

World Circuit. Is it a sports game or a true simulation? It earns a spot on both lists

THE BEST IN SPORTS GAME SOFTWARE

Sports simulations offer game designers a unique challenge: accurately representing real-world competition on the computer. While other game genres allow the imagination to dictate direction, sports titles demand unerring compliance to rigid rules and regulations. Sorting statistics is the easy part—after all, computers are born number crunchers. Simulating the true nature of any sport—an almost metaphysical balance of individual and team effort—is a whole other ball game. When all elements come together, however, the re-

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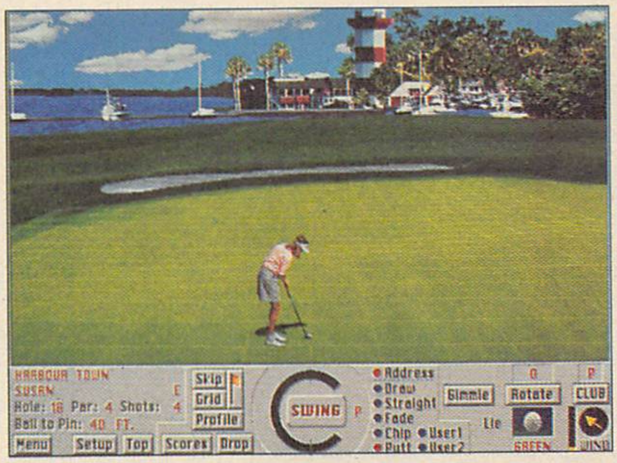
sults are often the most enduring entertainment of any software genre.

Few sports are as fiercely contested among designers and players as professional baseball. Debates over which title best simulates the action, statistics, or managerial options probably will rage as long as fans argue over their favorite teams. Hardball III (Accolade, 800-245-7744, $59.95) currently reigns as league leader in the action-oriented category. This one has a lot going for it: beautiful 256-color graphics, VCR-style instant replay (with option to save), accurately rendered stadiums, TV-style close-ups, multiple view angles, and best of all, digitized play-by-play from veteran sportscaster Al Michaels. Play options include exhibition games or user-defined full season play, with mid-season all-star games and limited statistical printouts. Add-ons, such as the MLBPA Players Disk ($24.95) and Big League Ballpark Disk ($24.95), extend the game's instant appeal.

Heating up the bullpen is Accolade's closest rival, Tony LaRussa Baseball II (Strategic Simulations, 408-737-800, $59.95). This power hitter actually boasts the league's best graphics and most realistic animation, but it falls short of the fence in terms of accurate and responsive player controls. Announcer Ron Barr is on board for digitized play-by-play—smoother, but not as expressive, as Michaels in Hardball III. As you'd expect from the title, the game shines on the managerial side, featuring a roster of 2,000 veteran players and 54 historical teams, with stats updated and printed in 134 categories. Optional add-on disks include the MLBPA Players ($19.95), AL/NL Stadiums ($29.95), and Fantasy Draft ($19.95).



Links 386 Pro from Access

For those who see baseball as merely a numbers game, the field abounds with several excellent all-stat games. Many of the league's oldest and most respected titles recently have resurfaced with much-needed graphical facelifts. Beneath their hi-res, mouse-driven facade, however, still beats the heart of a spreadsheet. Among the best new titles are MicroLeague Baseball 4 (MicroLeague Sports Association, 302-368-9990, $49.95), APBA Baseball for Windows (Miller Associates, 800-654-5472, $69.95), and Strat-O-Matic Computer Baseball 4.0 (Strat-O-Matic, 800-645-3455, $60).

Although baseball probably will always be known as the national pastime, football has long been America's favorite sport. The computer gridiron is also currently the scene of the game industry's hottest innovations. Leading the charge, with few competitors even close, is Front Page Sports: Football Pro (Dynamix, 800-326-6654, $69.95). The game's most obvious virtues are the dazzling on-field graphics, which use much of the same 3-Space technology pioneered in the company's best-selling flight simulators, Red Baron and Aces of the Pacific. More than 8,000 frames of rotoscoped animation make up the incredibly fluid, lifelike player movements, with nine fixed camera positions capturing the bone-crunching action. Gameplay itself is fast, smooth, and responsive, with support for dual joystick controls and truly remarkable computer artificial intelligence. But wait, we've only skimmed the surface! Beneath this slick veneer are the real goodies: 2,500 plays, real NFL teams and players, more than 300 printable stat categories, team owner and general manager duties, and the best coach's playbook designer on the market. No doubt about it, FPS: Football Pro is a work of art.

Of course, true football fans can never get enough pigskin action. The best of the second string titles offer credible performances in their own right. Tom Landry Strategy Football Deluxe Edition (Merit Software, 800-238-4277, $49.95) tops the list as the most entertaining coaching simulation. Highlights include a team and league editor, full season play, expanded stat tracking, null or remote modem play, and the most user-friendly interface in the genre. Other top draft choices for both action and strategy football include Unnecessary Roughness (Accolade, $69.95), NFL Football (Gametek, 800-928-GAME, $49.95), and NFL Coaches Club Football (MicroProse, 800-879-PLAY, $49.95). Pure strategy fans should check out MicroLeague Football 2 MicroLeague Sports, ($54.95) and 3-in-1 Football (Lance Haffner Games, $39.95).

Few sports are as well adapted to computer simulation as golf, with its understated strategies and graceful motion. The undisputed king of the fairways is Links 386 Pro (Access, 800-800-4880, $39.95), best known for its digitized full-motion video and scanned Super-VGA graphics. Most people don't believe their eyes upon first seeing the silky swings of the onscreen golfers. One of the game's most fascinating features is the ability to play a round and give the results (on disk) to a friend, who can then compete against your saved game. Other highlights include a user-defined windowed interface, multiple camera views, printable stats, and crisp digitized sounds. Like most other established golf games, this one boasts a batch of scenic course disks ($29.95 each). A Windows version is sold under the title Microsoft Golf (Microsoft, 800-426-9400,

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$64.95).

The runners up for best golf game are equally good, in their own way. Accolade has enjoyed tremendous success with Jack Nicklaus' Golf and Course Design: Signature Edition ($69.95), noted for its outstanding 256-color VGA course designer. Beyond the wide assortment of supplement course disks offered through the company, dozens of user-created courses can be downloaded off services such as CompuServe, GEnie, and America Online. Other worthy golf titles include PGA Tour Golf for Windows (Electronic Arts, 800-245-4525, $59.95) and David Leadbetter's Greens (MicroProse, 800-879-PLAY, $59.95), the latter noted for its unusual multiplayer modem option.

The mechanics of computer auto racing force most games in this category to straddle the line between sport and simulation. The best in a new breed of high performance models is World Circuit (MicroProse, $59.95). The game features exquisite reproductions of 16 world class Grand Prix circuits, from Monaco's twisting urban sprawl to the gut-wrenching figure eight of Japan's Suzuka raceway. Fabulous first-person perspective, rendered with a speedy combination of bitmapped and textured polygon graphics, puts you right on the tarmac. The game also feels right, whether you're tearing down the straight-aways or slipping into a tight curve. A unique alternating play mode allows two drivers to compete on a single computer. Or you can play two simultaneously via null or remote modem link. Other worthy contenders for the checkered flag are IndyCar Racing (Papyrus Software, 617-868-5440, $74.99), Car and Driver (Electronic Arts, $59.95), and Mario Andretti's Racing Challenge (Electronic Arts, $24.95).

TOP 10 SPORTS GAMES

Front Page Sports: Football Pro. Unbeatable combination of 3-D graphics, managerial decisions, and playbook design.

World Circuit. Great looks and smooth play combine for full-throttle action.

Hardball III. Well-balanced design of action, graphics, and strategy, with play-by-play by sensational Al Michaels.

Links 386 Pro. Soars to top of golfing leader board with digitized Super-VGA graphics.

4-D Boxing. Polygon graphics deliver ultra-smooth, lifelike animation.

APBA Baseball for Windows. Polished Windows interface brings new life to this venerable stat classic.

Jack Nicklaus Golf, Signature Edition. Lush graphics and built-in course designer highlight this all-time favorite.

Summer Challenge. Up to 10 players compete in 8 expertly designed Olympic-style events.

Tom Landry Strategy Football Deluxe Edition. Solid coaching sim with excellent stats, play calling, modem option, and the best mouse interface in its league.

NHL Hockey. Excellent conversion of the best-selling console classic.

The best of the so-called minor sports include 4-D Boxing (Electronic Arts, $24.95), an amazing new approach that borders on virtual reality. Boxers are rendered with large polygon shapes, affecting an odd, abstract look, but facilitating remarkably fluid, lifelike motion. Multiple camera angles, including a wild first-person view, puts you right in the ring. Hockey fans will be delighted with Electronic Arts' excellent NHL Hockey ($69.95), a potent combination of fast action and in-depth coaching skills. Converted to the PC from the best-selling Sega Genesis original, the game features full rosters of real NHLPA teams and players, with your choice of exhibition or full 84-game season play, including the Stanley Cup finals. Other highlights include Ron Barr's digitized voice, skate or coach play options, detail stat reports, and two-play competitive mode.

Other outstanding sports titles, in a variety of categories, include Summer Challenge (Accolade, $54.95), Test Drive III: The Passion (Accolade, $59.95), Wayne Gretzky Hockey 3 (Bethesda Softworks, 301-926-8300, $59.95), and Cactus League College and Professional Basketball (Cactus Development, 800-336-9444, $49.95).

—Scott A. May

THE BEST IN STRATEGY GAME SOFTWARE

In many ways, the strategy category serves as a catch-all for games that don't fit neatly within other, more specific, genres. When you think about it, every computer game requires the player to exert some degree of strategic skill. Arcade contests, for example, may seem like mindless action fare, but they actually demand a great deal of real-time plotting and scheming. Many of the titles you'll find here contain elements of arcade, simulation, adventure, or war games, yet offer enough strategic prowess to earn separate distinction.

The most clearly defined examples of the genre are titles based on traditional board, tabletop, and parlor games. Chess wizards looking for the ultimate opponent will find nirvana in The Chessmaster 3000 (The Software Toolworks, 415-883-3000, $49.95), available for both DOS and Windows. Advanced features include a library of 150 classic matches, blindfold chess, tournament and championship play, and finely tuned computer play and response settings. For the beginner, there's an online mentor and built-in tutorial. All players will enjoy the intuitive mouse-driven interface and wide selection of high-resolution chess pieces and board designs. For those in the mood for a strong game, with a slightly irreverent feel, check out the animated Battle Chess series from Interplay (714-553-6678), available in versions for DOS ($29.95), Windows ($49.95), and Super-VGA (this one is called Battle Chess 4000 and costs $59.95). All are strong opponents with exceptional graphic flair and the added attraction of remote modem play. Finally, there's National Lampoon's Chess Maniac 5 Billion and 1 (Spectrum Holobyte, 800-695-GAME, $69.95), a game

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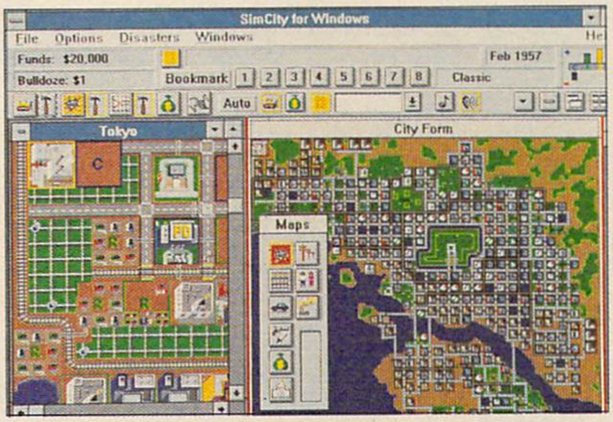

SimCity from Maxis

whose self-described "rude" sounds and animated graphics almost make up for its rather weak chess engine.

Solitaire addicts will be easily hooked on Solitaire's Journey (QQP, 908-788-2799, $59.95), a whirlwind tour of 105 different solitaire card games. Other titles in a similar vein include the Hoyle Book of Games series from Sierra (800-326-6654): Classic ($42.45), Vol. 2 ($29.70), and Vol. 3 ($42.95). For the more socially minded, there's Grand Slam Bridge II (Electronic Arts, 800-245-4525, $49.95), a 256-color VGA update of the best-selling original with new mouse and sound card support, customized bidding, and dealing options for up to four human players.

Perhaps the most famous—certainly the most copied—solitaire game designed especially for the computer is Shanghai II: Dragon's Eye (Activision, 800-477-3650, $29.95). A brilliant enhancement of Brodie Lockard's original work, the program is loosely based on the Chinese tile game, Mah-jongg. The latest version features 8 tile sets, 13 board designs, a two-player tournament mode, and a built-in board designer.

If gambling's your game, ante up to Amarillo Slim Dealer's Choice (Villa Crespo Software, 708-433-0500, $29.95), which features 28 poker varieties, online tutor, and user-defined house rules. What it lacks in presentation—marginal 16-color EGA—it makes up with fast, fun game play. Those on a budget will also enjoy Villa Crespo's Coffee Break gambling series, including Casino Craps, Dr. Wong's Jacks & Video Poker, and Dr. Thorp's Mini-Blackjack ($12.95 each). High rollers can wrestle the one-armed bandit without going to the cleaners in Strategic Video Poker (LWS Software, 800-828-2259, $49.95) and Masque Video Poker (Masque Publishing, 800-765-4223, $49.95). With detailed statistical analysis, numerous payoff configurations, and optional online strategy, both products offer fast-paced simulations of the most popular Las Vegas and Atlantic City machines. For an all-in-one guided tour of casino games, check out Beat the House (Gametek, 800-927-GAME, $59.95), which features detailed tutorials for slots, blackjack, roulette, video poker, and craps.

Computer incarnations of famous multiplayer board games include an entire series by Virgin Games (800-874-4607): Risk ($29.99), Monopoly Deluxe ($49.95), and Scrabble Deluxe ($49.95), available in high-res DOS and Windows versions. For classics that exist only on the computer screen, you can't get much more famous than Tetris (Spectrum Holobyte, $19.95), a simplistic, yet undeniably addictive, strategy game of falling blocks. The game's huge success sparked a wildfire of inferior knockoffs, culminating with the final—and best—version, Super Tetris ($49.95), available for both DOS and Windows. Another computer original bound for classic status is The Incredible Machine (Sierra, $34.95), an arcade-style puzzle feast inspired by Rube Goldberg's wacky homemade contraptions. The original contains 85 increasingly difficult levels, to which 80 more are added in the enhanced sequel, The Even More Incredible Machine ($42.45).

Game designers often look to real life for inspiration. Currently the hottest trend in strategy gaming is resource management, applied to everything from big business to complex social and political systems. One of the first to open this strategic can of worms was Will Wright's phenomenally popular SimCity (Maxis; 800-336-2947; $49.95 for DOS, $59.95 for Windows), a model of urban planning highly regarded for its realism. From this tiny seed, Maxis sprouted an entire line of fun, microcosm software, including SimEarth ($49.95), SimLife ($69.95), SimAnt ($49.95), and finally, SimFarm ($49.95). Bringing real-world resource management down to a more earthy level, this last title looks to be most tangible in the series.

Players with a nose for economic planning and elaborate corporate infrastructures can find rewarding careers in such games as Railroad Tycoon Deluxe (MicroProse, 800-879-PLAY, $69.95), Rags to Riches (Interplay, $59.95), A-Train Construction Set (Maxis, $69.95), Buzz Aldrin's Race Into Space (Interplay, $69.95), and Air Bucks (Impressions, 203-676-9002, $59.95).

Why manage a business when you can control the universe—or at least a small corner of it—in Populous (Electronic Arts, $24.95) and Civilization (MicroProse, $59.95). Populous is set in an abstract fantasy world, where two gods vie for supreme deity, via modem if so equipped. Civilization is Sid Meier's masterpiece of human survival, splendidly drawn from the pages of world history. Both games gave rise to a flood of excellent so-called *god sims,* including Populous II (Electronic Arts, $59.95), PowerMonger (Electronic Arts, $49.95), Utopia (Gametek, 800-927-GAME, $19.99), Global Effect (Millennium, 800-245-4525, $14.95), Caesar (Impressions, $59.95), and Mega lo Mania (UBI Soft, 415-332-8749, $49.95).

Looking for heavy strategy, but with a lively arcade bite? Take a walk on the dark side in Syndicate (Electronic Arts, $59.95), a grim look at the future of law and disorder. Command an elite squad of heavily armed cyborg hitmen in this one-

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player power struggle, noted for its stunning sound and graphic violence. Slightly less cynical, and more abstractly violent in nature, is RoboSport (Maxis, $39.95), a 1-2 player Windows game loosely based on the old Capture the Flag premise.

Strategy games and TV quiz shows have a lot in common—a connection best exploited by LexiCross (Interplay, $39.95), a flashy, futuristic word puzzle game played with quick wits and tongue firmly in cheek. With several levels of difficulty, modem option, and superb multiplayer tournament mode, this classic offers true long-lasting challenge. Another excellent offering in the TV game show format is CrossWire (SilverSun, 800-874-5837, $39.95). Test your knowledge in more than 16 categories, including pop culture, history, science, art, sports, music, and geography in this fast-paced Windows game.

—Scott A. May

TOP 10 STRATEGY GAMES

Civilization. Grow your own society, loosely based on human history, both good and bad. Like an interactive civics lesson, but more fun.

The Even More Incredible Machine. Beneath the silly arcade front lurks a seriously fun, mind-bending strategy game.

Populous. First of the so-called *god sims* remains the genre's most polished.

SimCity. The microcosm that started a revolution. If only real cities were this much fun to build.

Railroad Tycoon Deluxe. If you build it, they will run—railroads, that is. A classic of hands-on entrepreneurial strategy.

LexiCross. Take a TV game show, zap it into an offbeat future, and you've got a classic multiplayer word puzzle game.

Buzz Aldrin's Race Into Space. Find out if you've got the right stuff to beat the Russians to the new frontier. Complex, historical, and thoroughly rewarding.

Chessmaster 3000 (Windows version). This one has beauty and brains, an unbeatable move for serious chess fans.

RoboSport. Employ unusual think-ahead strategies to program robots for real-time combat. A two-player classic, with modem option.

Syndicate. Populous meets Blade Runner in this dark, violent, and marvelously original action-strategy game.

THE BEST IN ADVENTURE GAME SOFTWARE

Adventure games are currently the most popular form of computer entertainment. If you can look at pictures, read a few words, and click with the mouse, that's all the skill needed to play one. A distant relative of the industry's early all-text adventures, today's adventures are more akin to huge, interactive versions of what the comic-book industry now calls graphic novels. It's a blistering hot field, thanks to continuing advances in cinematic techniques, digitized sound, effortless interfaces, and quality scripts.

Like its close cousins in the role-playing genre, adventure games are heavily influenced by mystic lands of magic, lost treasure, poor souls held captive, and brave heroes to the rescue. There are also extremely strong puzzle elements, in the form of clever word play or visual riddles, which often must be solved before turning the page.

The grand old master of the genre is, without a doubt, Sierra's King Quest series, created by Roberta Williams. Now in its sixth installment, each stand-alone adventure delves deeper into the lives of its cast of recurring characters, the royal family of Daventry. To ardent followers of the series, Williams' elegant prose evokes imagery as rich and rewarding as any in traditional literature. Combining beautiful scanned artwork, ambient sound effects, an open-ended storyline, and a comfortable mouse interface, King's Quest VI: Heir Today, Gone Tomorrow (800-326-6654, $67.95) is by far the best. Although technically less dazzling, King's Quest V ($59.45) remains a solid choice, and in many respects, offers a more intriguing plot.

Another top fantasy adventure is The Legend of Kyrandia (Virgin Games, 800-874-4607, $39.99), designed by Westwood Studios, creators of the original Eye of the Beholder role-playing games. In this quest, you must defeat the evil court jester Malcolm, who has slain the king (your father), stolen the magic gemstone, and cast the entire land of Kyrandia into turmoil. Beneath this simple story lies an adventure filled with uncommonly rich characters—and surprising humor—enhanced by excellent graphics, sound, and animation.

Graphic adventures with a more modern twist include Indiana Jones and the Fate of Atlantis (LucasArts, 415-721-3300, $34.95), loosely based on Steven Spielberg's popular movie series. Join the offbeat archaeologist, master of the bullwhip and double-entendre, as he battles Nazi spies on—and below—several continents. It's the best Indy movie that was never made.

Those who prefer to leave graphics to the imagination will enjoy a game from Activision (800-477-3650) called Lost Treasures of Infocom, a fantastic collection of all-text adventures from a true pioneer in the genre. Volume One ($69.95) features 20 individual titles, including the entire Zork series, as well as such classics as Deadline, Witness, Lurking Horror, Infidel, Planetfall, and Hitchhiker's Guide to the Galaxy. Volume Two ($49.95) offers an additional 11 titles, including Border Zone, Bureaucracy, Cutthroat, and Wishbringer. Beyond sheer entertainment value, both libraries contain bona fide collector's items, chronicling the history of early computer games. Despite their age, few of the adventures have lost their appeal. Fittingly, the groundbreaking Zork series has reemerged with state-of-the-art, digitized graphics in Activision's recently released Return to Zork ($79.95).

Science fiction adventures are staging a strong comeback, boldly led by such titles as Martian Memorandum (Access, 800-800-4880, $39.95), Star Trek: 25th Anniversary

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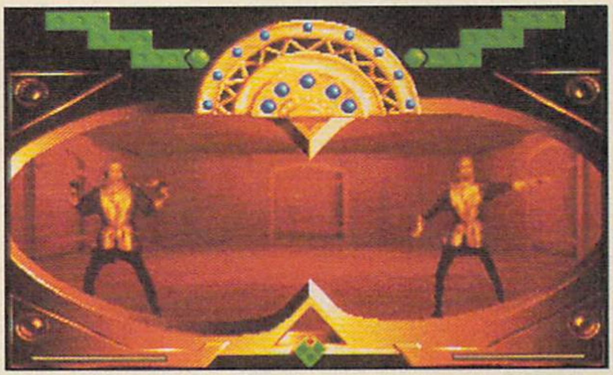
(Interplay, 714-553-6678, $49.95), and Space Quest V (Sierra, $59.45). One of the most original works in recent years is Inca (Sierra, $50.95), designed by Paris-based Cotel Vision. Sparked by myriad puzzles and arcade sequences, it's a surreal blend of fact and fiction, topped with gorgeous graphics and full-motion video. Another French developer on the cutting edge is Delphine Software, best known for Out of This World (Interplay, $59.95), a fascinating blend of rotoscoped action and cinematic-styled adventure. Those who desire more traditional excursions into science fiction will thoroughly enjoy Frederik Pohl's Gateway (Legend, 800-245-7744, $59.95) and Gateway II: Homeworld (Legend, $59.95). Both titles feature Bob Bates' intuitive and efficient windowed text interface.

Hardboiled detective fans have a lot of graphic adventures to choose from. Police Quest 3 (Sierra, $59.45) and Blue Force (Tsunami, 209-683-9283, $69.95) take players into the heart of darkness. These tough urban crime dramas unfold at a brisk clip, packed with intense action and mystery. For more old-fashioned detective fare, crack open The Lost Files of Sherlock Holmes (Electronic Arts, 800-245-4525, $69.95), a large-scale murder mystery that's anything but elementary. This one's notable for its intuitive icon interface, context-sensitive musical score, and handsomely drawn artwork.



Inca from Sierra OnLine

Of course, many of the best adventures aren't confined by traditional storylines; they incorporate elements of arcade, role-playing, and real-time strategy. You'll find both action and suspense on the high seas with Pirates! Gold (MicroProse, 800-879-PLAY, $54.95), a full-blooded enhancement of Sid Meier's best-selling original. Set sail under an English, French, Dutch, or Spanish flag in one of six rich historical eras, ranging from 1560 to 1680. As a dashing buccaneer, you'll live a fascinating life, full of exploration and confrontations, from political posturing and trade negotiations, to exciting ship-to-ship combat and deadly fencing duels.

TOP 10 ADVENTURE GAMES

King's Quest VI. Latest edition of Roberta Williams' trend-setting adventure series is bigger and better than ever.

Monkey Island 2: LeChuck's Revenge. Side-splitting pirate parody doubles as challenging adventure yarn.

Inca. Uncommonly original and perfectly executed blend of disparate gaming styles, held together with stunning graphics and sound.

Indiana Jones and the Fate of Atlantis. Filled with action and humor, this rousing adventure features a plot even Hollywood can't match.

Alone in the Dark. Turn out the lights, turn up the sound, and enter a spine-tingling world of horrifying entertainment.

Day of the Tentacle. Vintage B-movie spoof for kids and parents alike, accented with colorful, stylish cartoon graphics.

Eric the Unready. Fantasy role-playing may never be the same after running this gauntlet of in-jokes and pratfalls.

Out of This World. Strikingly original combination of rotoscoped animation, cinematic action, and problem-solving adventure.

Pirates! Gold. The perennial swashbuckling favorite returns with enhanced gameplay and knockout Super-VGA graphics.

The Lost Treasures of Infocom. Two-volume set offers glimpse of gaming history through 31 classic all-text adventures.

Horror buffs have plenty to howl about, beginning with Alone in the Dark (Interplay, $59.95), a bloodcurdling adventure inspired by H. P. Lovecraft. Explore every creaking inch of a creepy old mansion, fending off ghosts, ghouls, and insidious traps. Rendered with fluid, 3-D texture polygons, the designers succeed in creating a kind of virtual reality nightmare. Unsettling mood music and crisp digitized sound effects will keep you up all night, chilled to the bone. Other harrowing horror titles include The Legacy: Realm of Terror (MicroProse, $59.95), Dark Seed (Cyberdreams, 800-238,4277, $69.95), Return of the Phantom (MicroProse, $59.95), Uninvited for Windows (Viacom New Media, 708-520-4440, $59.95), and Elvira II: Jaws of Cerberus (Accolade, $69.95). Players with itchy trigger fingers can even lead a space-age bug hunt in Space Hulk (Electronic Arts, $59.95), an utterly visceral adventure with strong arcade and strategy elements.

On the lighter side, nothing is sacred on Monkey Island 2: LeChuck's Revenge (LucasArts, $34.95), Ron Gilbert's agonizingly funny sendup of the pirate adventure genre. Role-playing games get an equally painful kick in the pants with Eric the Unready (Legend, $59.95), a text and graphic adventure with more inside jokes than you could shake a talisman at. You'll never look at a detective story with a straight face after playing Sam and Max Hit the Road (LucasArts, $69.95), a slapstick misadventure starring everyone's favorite freelance police. Yet another hot LucasArts comedy is Day of the Tentacle ($69.95), a marvelously drawn B-movie parody. Finally, there's Freddie Pharkas, Frontier Pharmacist (Sierra, $59.45), a terrific wild west spoof from Al

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Lowe, king of sophomoric satire and creative father to Leisure Suit Larry, world famous lounge lizard. For those who can't resist sexist gags and toilet humor, check out Leisure Suit Larry 5 (Sierra, $33.95), but don't say we didn't warn you.

—Scott A. May

THE BEST IN ROLE-PLAYING GAMES

Role-playing games, by nature, are unquestionably the most personal of all entertainment genres. After all, the basic premise of any role-playing game is to delve as deeply as possible into the psyche of its main characters. Most games let you carefully craft a party of characters, then pamper, polish, and protect them through outrageous adventures. Some fictional characters are programmed to develop such distinctive personalities that if they fall to harm's way, their human caretakers often react with intense emotions.

Computer role-playing games (CRPG) are natural extensions of their traditional pen-and-paper games or table-top miniatures. Instead of simply imagining monsters and moss-covered labyrinths, computer games burst with ethereal life, thanks to ever-evolving graphics and sound effects. Hard-liners may complain that the real magic has been lost; for the rest of us, however, CRPGs are the realization of our dreams—or more often, our nightmares. Almost without exception, role-playing games are dark, otherworldly affairs. Most CRPGs take place in the distant past or in strange fantasy realms populated by wizards, dragons, and elves and topped with an overabundance of evil.

The fantasy realm is stocked with so many quality efforts, it would be impossible—and downright confusing—to mention them all. An excellent place to hone your skills is the third installment of Jon Van Caneghem's popular series, Might and Magic III: Isles of Terra (New World Computing, 800-325-8898, $39.95). Unlike many single-minded adventures, this game consists of a series of miniquests, each taking you a step closer to your final confrontation. Foremost among the game's many innovations is its icon-driven player interface and its use of large scale, brightly colored graphics. The game also introduces new techniques for unrestricted wilderness travel; this allows players to explore virtually every nook and cranny of this massive gaming universe. Van Caneghem has followed this landmark game with two equally impressive Might and Magic titles: Clouds of Xeen ($39.95) and Darkside of Xeen ($49.95).

One of the genre's most successful pairings has been Strategic Simulations' computer recreations of TSR's legendary Advanced Dungeons & Dragons series. The result has been a steady stream of high-quality products, known to fans as the Gold and Black Box games. The cream of this prolific crop is without doubt the Eye of the Beholder series, volumes 1-3 (408-737-6800; $19,95, $59.95, and $69.95, respectively). Trademark features of the games include superb character generation and combat controls, intelligent nonplayer characters, cinematic-style story transitions, and chilling real-time action in the 3-D graphics window.

The final installment, Assault on Myth Drannor, is particularly challenging and recommended for experienced players only. Those who have mastered every castle and dungeon in the series can now create their own with Strategic Simulation's Unlimited Adventures ($59.95), a full-featured AD&D fantasy construction set.

Another long-running favorite in the genre is the Ultima series by Origin's Richard Garriott, a.k.a. Lord British. Like many of its contemporaries, the series recently replaced its flat graphics and stilted interface with exquisite 256-color VGA, mouse-driven controls, and digitized speech. The latest editions of the award-winning saga are Ultima VII: The Black Gate (800-245-4525, $79.95) and its add-on disk, Forge of Virtue ($24.95). This game continues the series' familiar three-quarter, top-down view of the action but fills the full screen with improved graphic detail and peripheral animation. The storyline is huge and delightfully complex—not surprisingly, it takes nearly 20 megabytes of hard drive space. Garriott also jumps on the first-person bandwagon with Ultima Underworld: The Stygian Abyss ($79.95). Unlike similar efforts, where characters must walk a path with limited view angles, this game allows unrestricted 360-degree movement. Combined with beautifully drawn 3-D modeled terrain and a remarkable illusion of depth, the experience is extraordinary. Origin recently followed with Ultima Underworld II: Labyrinth of Worlds ($79.95), which features a slightly revamped interface and the return of some old enemies.

The oldest of the genre's esteemed originals, by many accounts, is perhaps the best of the bunch: Wizardry VII: Crusaders of the Dark Savant (Sir-Tech, 800-447-1230, $69.95). D.W. Bradley's epic series was the first CRPG to feature phased combat and 3-D perspective—in 1981's Proving Ground of the Mad Overlord. Although Sir-Tech subsequently fell behind in the audio/visual department, the company makes a bold comeback with this dazzling work. Atop the game's traditionally styled role-playing engine—widely considered the strongest in the genre—Bradley integrates a marvelous mouse-driven graphic interface. Of special note is the spine-tingling sensation of creatures rustling just beyond your field of vision, accompanied by distant growls, growing louder as you approach. Other new features include wilderness travel, automapping, day/night cycles, and vastly improved magic and combat. For players continuing on from the previous bestseller, Bane of the Cosmic Forge ($59.95), the game boasts multiple starting points.

Among the best in a new breed of role-playing games is Betrayal at Krondor (Dynamix, 800-326-6654, $59.45), based on the best-selling Riftwar Saga by Raymond E. Feist. In this totally unique blend of CRPG and graphic adventure, the story's characters aren't created by the player; instead, you function as a kind of interactive narrator, guiding the otherwise fiercely independent char-

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TOP 10 ROLE-PLAYING GAMES

Might and Magic: Clouds of Xeen. Big and colorful, this one's an excellent choice for rookie role-players.

Betrayal at Krondor. With a unique open-ended style, this is the vanguard of a new breed in roleplaying adventure.

Wizardry 7: Crusaders of the Dark Savant. The grand elder of the genre, graphically updated and wicked as ever.

Ultima Underworld. Lord British goes underground with this stylish, 3-D virtual fantasy environment.

Eye of the Beholder III. The final installment of this trend-setting series offers tough challenges for advanced players.

Unlimited Adventures. Design your own diabolical quests with this full-featured role-playing construction kit.

Starflight 2. The first true science fiction role-playing classic makes up in gameplay what it lacks in graphics.

Star Control II. Interstellar epic combines exceptional graphics with role-playing, adventure, and arcade-style space combat.

Ultima VII. Latest in long-running Lord British series features vastly improved control scheme, sound effects, and character intelligence.

Lands of Lore: Throne of Chaos. A graphic knockout, with a storyline to match, enriched by an intuitive, streamlined interface.

acters through a series of adventures. Likewise, the game's structure can be tight or loose, closely following the main plot line, or branching off to explore a 3-D virtual fantasy world—224 million square feet of trails, rivers, mountains, lakes, islands, towns, twisting sewers, and abandoned mines. Because characters learn behavior based on decisions made at a particular time or place, no two games are exactly alike. Also worth noting is the extensive use of scanned artwork and digitized actors, as well as the 3-D tactical combat system.

Other worthy titles in the fantasy realm include Lands of Lore: Throne of Chaos (Virgin Games, 800-874-4607, $49.95) from Westwood Studios, creators of the original Eye of the Beholder; Magic Candle III (Mindcraft, 800-525-4933, $59.95); Challenge of the Five Realms (MicroProse, 800-879-PLAY, $49.95); Realms of Arkania (Sir-Tech, $59.95); Elvira (Accolade, 800-245-7744, $24.95); and Darklands (MicroProse, $59.95).

Tired of trolls and arcane magic? Blast off to the future with science fiction role-playing games. Although the selection isn't nearly as large, this category recently has sparked renewed interest among game designers. Two of the oldest, yet still highly regarded, are Starflight and Starflight 2 (Electronic Arts, 800-245-4525, $24.95 each). Although the graphics and sound are primitive by today's standards, these intergalactic quests are unparalleled for their deep space atmosphere and player involvement. Much of this spirit also can be found in Star Control II (Accolade, $59.95), an epic-flavored star quest boasting excellent sound and graphics, involved alien interaction, and the best arcade-style space combat in the genre. Other titles of this caliber include Planet's Edge (New World Computing, $29.95), Hard Nova (Electronic Arts, $24.95), and Tegel's Mercenaries (Mindcraft, $59.95).

Another title of exceptional quality is Rules of Engagement 2 (Impressions, 203-676-9002, $69.95), Omnitrend's mammoth space saga that combines starship role-playing with strategy and real-time tactical combat. The game's most remarkable feature, however, is called the Interlocking Game System, which offers internal links to Impressions' classic Breach 2 ($14.95) and upcoming Breach 3.

—Scott A. May

THE BEST IN WAR GAME SOFTWARE

Historical conflict games or war games, as they usually are known, have been around for many years. Originally available as board games from such giants as Avalon Hill, SPI, and GDW, the war game was the standard start up fare of a number of companies, most notably Strategic Simulations (SSI). Although much maligned as an adjunct of "war toys" by the politically correct, historical conflict games are, in fact, the preference of those who combine a love of history and/or find chess too abstract as a strategic challenge. For the purposes of this article, games that include warfare as an intrinsic part of the game also have been included. Many of the newcomers to computer war games have come from the board game market. A half way point in that journey is HPS's Aide De Camp ($79.95). Aide De Camp is a gamer aid, which allows the conversion of board games into computer representations that can be used for e-mail gaming.

Three companies dominate the war game field today. SSI has been joined by Three Sixty and the Australian firm SSG. While it's impossible to issue a blanket recommendation for each company, it's fair to say that most of their products are impressive.

In 1992, Three Sixty Pacific (800-653-1360) changed the face of computer war gaming with the introduction of V for Victory: Utah Beach ($69.95). Here was a game designed for the computer but set up in board game style. Immediately, a large segment of the potential audience was completely at ease. Moreover, the June 44 Normandy Invasion was a perfect backdrop for an entertaining challenge. Subsequent releases in the V for Victory series have included, Velikiye Luki ($69.95), one of the more obscure Eastern Front Battles; Market Garden ($69.95); and the recent release of Gold : Juno : Sword: ($59.95). Three Sixty will be packaging the first three V for Victory games into a special Victory Pack ($69.95), which may qualify as one of the better Christmas bargains. The developers of the V for Victory series, Atomic Games, have now moved over to Avalon Hill and will be working on a conversion of the venerable Squad Leader board game.

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Strange how cyclic this business can be. Three Sixty's other World War II European Theater depiction, High Command ($69.95), is in many ways more of a game than a simulation. Until Avalon Hill redoes Third Reich properly, High Command remains locked in battle with Clash of Steel (SSI, 408-737-6800, $69.95) for the attention of strategic gamers.

Clash of Steel is the latest in a long line of great war games from SSI. Simpler than High Command, Clash of Steel still allows the opportunity to explore different historical what ifs and various areas of research. For most war gamers, both strategic simulations will be of interest. SSI's war games are too many to list, but one that should be noted is Battles of Napoleon ($49.95), one of the more accurate games on the market. It includes four battles and a scenario construction set. Of the many Civil War titles produced by SSI, Gettysburg: The Turning Point ($59.95) remains the best of the lot even after seven years. Pacific War ($79.95), Western Front ($59.95), the somewhat strangely named East Front Game, Second Front ($59.95), the out-of-print USAAF, and Carrier Strike ($59.95)—all have one thing in common: Gary Grigsby. A prolific designer of good and occasionally great games during the 1980s, Grigsby has been putting out hit after hit recently. If you come across a game produced in the 1990s and designed by Grigsby, get it. Grigsby also supports his own games on the GEnie online service.

The only design team to challenge Grigsby in quality and quantity is the Australian team of Roger Keating and Ian Trout. Their company, SSG (904-494-9373) has been putting out consistent product since the release of Battlefront ($39.95) in 1987. While a good corp-level World War II game in its own right, Battlefront has become the framework for a string of quality historical recreations. Most notable is the civil war trilogy, Decisive Battles of the Civil War I, II, and III ($40 each). Each game contains 5-6 significant (though not necessarily decisive) battles of the Civil War. SSG's Carriers at War ($50), the company's first release nearly 10 years ago, continues to age well. The update, Carriers at War 2 ($70) is even better, and the recent Carriers at War Construction kit ($60) contains nine new scenarios and the ability to design your own.

Australia also has provided the biggest diamond in the rough. Panther Games, ably led by Dave O'Conner, produced Fire Brigade. While hard to find, this game of late 1943 Eastern Front battles was a forerunner of the V for Victory series. Strong artificial intelligence also was featured in this product.

Few games in our time have had the reputation of Empire. Mark Baldwin's game, published by Interstel, is no longer available, but New World Computing (800-325-8898) introduced Empire Deluxe ($59.95) in 1993. Deluxe adds most of the requests made by Empire fans. Castles II (Interplay, 714-553-6678, $59.95) was a pleasant surprise. A sequel that was better than its original, as Vince De Nardo and crew added more gameplay elements. Bruce Zaccagnino and QQP (908-788-2799) released Mark Baldwin's Perfect General ($59.95), a game designed more for playability than accuracy. Zaccagnino's own Lost Admiral ($59.95) owes more than a passing compliment to Baldwin's Empire and, therefore, was well received. Lawrence Schick at MicroProse (800-879-PLAY) was behind Task Force 1942 ($69.95), a game that might qualify for the simulation list.

Probably the biggest surprise this past year, and a pleasant one at that, was Dune II (Virgin Games, 800-874-4607, $59.95). Developed by Westwood, which is better known for its adventure games, Dune II provided some of the best tactical challenges in years. Impressions (203-676-

TOP 10 WAR GAMES

Civilization. Quite simply the best game on the market. Not specifically a war game but more a combination of the best elements of Sid Meier's previous Railroad Tycoon, Maxis' Sim City, and a multitude of strategy and war games.

Master Of Orion. While not quite Civilization in Space, Master of Orion comes close. Featuring multiple races with different strengths, plus an artificial intelligence that doesn't cheat while playing the *impossible* level.

V for Victory series. For board game players making the transition to computer games, nothing could be better than the V for Victory series.

Empire Deluxe. While no longer a top seller, Empire remains one of the better games. Empire Deluxe adds the best wish list requests to make the ultimate game for many.

High Command. Returning once more to World War II, High Command follows the Three-Sixty Pacific tradition of producing computer war games that resemble board games.

Battlefront Series. Rather than pick one of this series, it's better to recognize the entire group of Battlefront games from SSG.

Caesar. An impressive move into the U.S. market from the British firm, Impressions. Sim City does Rome best describes this sleeper hit.

Clash of Steel. A strategic treatment of the War in Europe 1939-1945. In many ways, Clash of Steel is a poor man's High Command. The program's artificial intelligence is its best selling point—it performs well on both offense and defense.

Dune II. A game overlooked by many war game players. Set within the classic Dune world, Dune II is a game of economic and military struggle. It contains classic board game strategies with Sim City-like construction.

Fire Brigade. Truly ahead of its time, this game of Kiev eastern-front battles by Dave O'Conner and Panther Games contained many of the elements that made V for Victory so successful. Hard to find—perhaps someone will acquire the rights and update this classic.

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9002) is a new kid on the block. Its When Two Worlds War ($59.95) is simplistic as a one-player game, but as a two-player modem game, it really shines. Caesar (Impressions, $59.95), the company's Sim City meets Rome game, remains a favorite. Impressions is also the home for Rules of Engagement 2 ($69.95). A space conflict game stunning in its scope, Rules of Engagement 2 has one of the most detailed built-in scenario editors ever published.

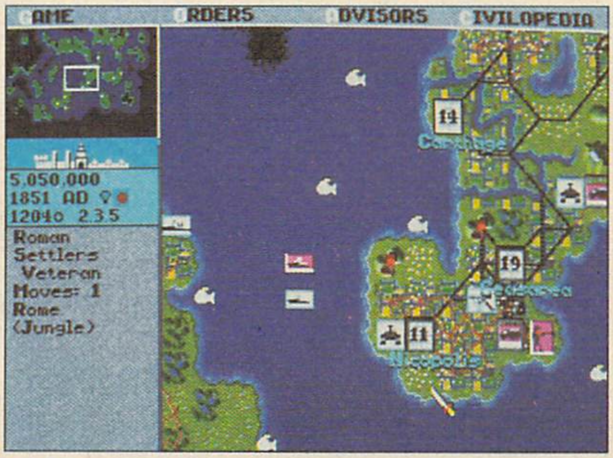
Space conflict games as a whole are an interesting breed. Our Australian friends at SSG have put out a classic in Reach for the Stars, one of the few games worth buying an obsolete machine just to play. The release of Master of Orion ($49.95) from MicroProse ups the ante in the space warfare genre. Which leaves us with the best game on the market today, Civilization (MicroProse, $69.95). Because it's a game that doesn't fit neatly into any particular classic pigeon hole, we can only proclaim it the best in whatever category you might choose to place it.

The future holds much promise, as Jim Dunnigan's Victory at Sea (360), Sid Meier's Civil War Game (MicroProse) and Atomic's Squad Leader (Avalon Hill) are all potential inductees into next year's war game top ten.

—Wallace Poulter

THE BEST IN CD-ROM GAMES

CD-ROM games have come a long way in the last few years. We've gone from CD-ROMs that contain only disk-based versions of games to CD-ROMs with games created especially for the new medium—and everything in between.



Civilization from MicroProse

For the sake of simplicity, let's break these CD-ROM games into three categories: ports, hybrids, and pure breeds.

Ports

When CD-ROM drives started to sell well in 1989, game developers began to port the disk-based versions of their most popular games to the new medium. It was the easiest and quickest way to test the waters. Access released a CD-ROM with many of its previous hits, Origin combined its popular Wing Commander with two mission disks onto one CD-ROM and Ultima Underworld I & II onto another, and LucasArts produced a CD-ROM with Secret Weapons of the Luftwaffe and threw in some add-on disks. The extra value came from buying several games for the price of one and not having to install the games on your hard drive.

Even today, you can find vendors offering CD-ROMs in value-pack ports. By the time your read this, Psygnosis will be selling a CD-ROM that contains both Lemmings and Oh No! More Lemmings for the price of a single game (Psygnosis, 617-497-7794, $59.99).

Hybrids

Most of today's CD-ROM games are actually hybrids—disk-based games that are given extra features when converted to CD-ROM. The immense space provided by the CD-ROM (as much as 680MB) lets a company take a popular DOS-based game and add voices to the characters, a digitized music track, and even additional graphics and puzzles.

The most dramatic example of these added features is the adventure game, King's Quest VI CD (Sierra On-Line, 800-326-6654, $79.95), which is an enhanced version of the disk-based King's Quest VI: Heir Today, Gone Tomorrow. The CD-ROM version replaces the characters' onscreen words with actors' voices (for a total of four hours of dialog and narration) and adds higher-resolution graphics throughout the game (under Windows, the icon interface, inventory items, and talking characters are shown in 640 x 480 with 256 colors). The CD-ROM also includes a 50-megabyte animated sequence that runs for 7 minutes, as well as a 4°- minute Video for Windows movie that shows how the game was made.

Most hybrid CD-ROM adventure games add spoken dialog and narration. These include Sierra's other CD-ROM games, King's Quest V ($69.95), the previous adventure in this popular series; Space Quest IV ($69.95), a rollicking spoof of space adventures, featuring the voice of Garry Owens ("Laugh-In"); Laura Bow: The Dagger of Amon Ra ($69.95), a mystery adventure in the tradition of Nancy Drew; and The Adventures of Willy Beamish (on the Dynamix label, $69.95), a light-hearted look at the action-packed life of a pre-teen.

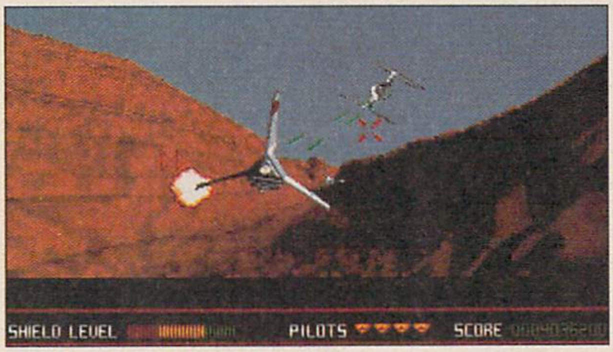
LucasArts offers similarly enhanced CD-ROM versions of its popular adventure games, including Loom (415-721-3300, $59.95), a magical tale that successfully integrates a musical theme into the story; Monkey Island (415-721-3300, $59.95), a satisfying spoof of pirate adventures; Indiana Jones and the Fate of Atlantis (800-STARWARS, $69.95), an original story based on the popular movie character; and Day of the Tentacle (800-STARWARS, $69.95), a droll parody of 1950s science-fiction movies.

Other hybrid titles include Dune (Virgin Games, 800-874-4607, $99.99), which integrates actual footage from David Lynch's classic movie, *Dune;* Battle Chess CD-ROM Enhanced (Interplay, 714-553-6678, $79.95), which sports a new music track, additional sound effects, and higher-resolution graphics; The Chessmaster 3000 (The Software Toolworks, 415-883-3000, $79.95), a first-rate chess game that adds full voice instruction; Microsoft Multimedia Golf (Microsoft, 800-426-9400, $64.95), which adds spectacular flybys of each hole and video golf pro tips to the disk-based Microsoft Golf for Windows; and Inca (Sierra On-Line, 800-326-6654, $69.95), a marvelous mix of ancient cultures and high-technology with animation and sound added to the CD-ROM version.

Pure Breeds

The future belongs to games that are designed especially for CD-ROM. You only have to compare the quality of most of the new made-for-CD-ROM titles to the typical port and hybrid games to see the incredible potential of the new medium.

Many of the companies that have dominated the hybrid market, such as Sierra and LucasArts, are designing games that will be available only on CD-ROM. In 1994, many of the top games from the well-known game companies will be designed especially for CD-ROM and then scaled-down for the disk version. By 1995, many of these same companies will either be producing games only for CD-ROM or releasing each game in separate versions for both CD-ROM and disk. With as much as 680MB available for a CD-ROM game versus 20-30MB for a disk-based game, it shouldn't be surprising that the leading edge games are moving to CD-ROM.



Rebel Assault from LucasArts

The year 1993 has brought us the first group of games created especially for CD-ROM. While not all of them are as playable as the best disk-based or hybrid-CD-ROM games, their advanced graphics and sound have dramatically raised our expectations for computer-based games. The most famous of these would have to be The 7th Guest (Virgin Games, 800-874-4607, $99.99). Too large to fit on a single CD-ROM, this double CD-ROM game features a terrific musical score (especially when used with a General MIDI music device), full-motion video characters, and eye-popping 3-D rendered backgrounds.

Sherlock Holmes: Consulting Detective Volumes II & III (Viacom New Media, 708-520-4440, $69.95 each) are the follow ups to Sherlock Holmes: Consulting Detective Volume I ($69.95), which was one of the first games to integrate video clips into the game's action. Viacom's latest title, Dracula Unleashed ($69.95), includes over 150 video scenes (for a total of 90 minutes of video) that you navigate using a VCR-like interface. Who Killed Sam Rupert? (Creative Multimedia, 503-241-4351; $39.99) also successfully integrates video clips into a mystery setting. A sequel to Sam Rupert should be available by the time you read this.

Model car fans will enjoy two innovative CD-ROMs from Revell-Monogram (708-966-3500): European Racers ($69.95) and Backroad Racers ($69.95). Both feature an actual model car kit, step-by-step instructions on how to construct the model (rendered onscreen in high-resolution 3-D polygon animation), and a racing game where you can square off against similar vehicles (here you'll interact with video footage of various characters, such as a policeman and a pit crew member). Each CD-ROM includes the simulation software for three additional models, which you can buy separately at toy stores or hobby shops.

Quite a few pure breed CD-ROM games will be shipping just before Christmas. They all feature graphics, sound effects, and music that are state-of-the-art.

Hell Cab (Time Warner Interactive, 800-593-6334, $99.99) includes photo-realistic characters and a plot that involves a New York City cab driver (he's really a trainee devil), prehistoric jungles, Nero's Rome, and the trenches of World War I. Your goal is to make it back to the airport with your soul intact.

If you liked X-Wing, you'll love Rebel Assault (LucasArts, 800-STARWARS, $69.95). This thing looks and sounds so much like a Star Wars movie, you'll do a double-take. The ships and planets are rendered with high-resolution graphics to match the ones in the Star Wars films; John Williams' score is there, often note for note; and even the dialogue and position of the characters recall specific scenes from the movies.

The Journeyman Project (Quadra Interactive, 619-931-4755, $79.95) has some of the most innovative graphics I've ever seen in a game. The year is 2318. Your mission is to repair a rip in time caused by careless time traveling. The game features both arcade action and mental puzzles. The pre-release version I played ran slow, but Quadra Interactive was working on speeding it up.

Iron Helix (Spectrum Holobyte, 510-522-3584, $99.95) is an action adventure game set in the future. A biological weapon threatens to start a galactic holocaust—unless you can pilot a small robotic probe through an enormous starship.

Other titles scheduled for imminent release include The Labyrinth of Time (Electronic Arts, 800-245-4525, price not available), a Super-VGA maze with logical puzzles and historical themes (you travel from a subway car to various historical eras); Myst (Brøderbund, 800-521-6263; $59.95), a stunningly photo-realistic adventure from Rand and Robyn Miller (developers of the Manhole and Cosmic Osmo), ship-

ENTERTAINMENT SOFTWARE

ping in early 1994; The XIth Hour: 7th Guest Part II (Virgin Games), the eagerly awaited sequel to The 7th Guest (planned for late 1993 or early 1994); Microcosm (Psygnosis, 617-497-7794, $59.95), yet another great-looking sci-fi game; and Conspiracy (Virgin Games), a Soviet thriller starring Donald Sutherland.

If you think Conspiracy sounds more like a movie than a CD-ROM game, prepare to be amazed by the CD-ROM games that will be released in 1994. Access (800-800-4880) is set to release its double CD-ROM game, Under a Killing Moon, by early spring, starring Margot Kidder, Brian Keith, and Russell Means. If you have the new $449 ReelMagic board from Sigma Designs (510-770-0100), you'll be able to view its virtual reality sequences as full-screen, full-motion video with CD-quality sound. Other CD-ROM games that will be available in ReelMagic's MPEG-compression format include Activision's Return to Zork, Interplay's Lord of the Rings, Readysoft's Dragon's Lair, Sierra's Outpost and Police Quest 4: Open Season, and Virgin's The XIth Hour: 7th Guest Part II.

Expect 1994 to be the year that interactive movies truly come of age.

—David English

TOP 10 CD-ROM GAMES

The Journeyman Project. The pre-release runs slow, but the graphics are the best I've seen. Looks to be the best conceived of the bumper crop of science-fiction CD-ROM games.

King's Quest VI. One of Sierra's best games, enhanced for CD-ROM with dialog, a high-resolution interface, and a 50MB opening animation.

The 7th Guest. Most celebrated and innovative CD-ROM game of the first half of 1993. Great musical score and eye-popping interiors paved the way for the current wave of stunning titles.

Day of the Tentacle. Wacky graphics and humorous storyline makes this spoof of 1950s sci-fi movies a joy from start to finish. Cast includes Richard Sanders of "WKRP in Cincinnati."

Rebel Assault. Combine the excitement of X-Wing with high resolution graphics and a movie-like score, and you have the first high-powered arcade game for CD-ROM.

The Chessmaster 3000. Simply the best way to learn chess on your own. The spoken instructions make the CD-ROM version extremely easy to use.

Space Quest IV. Roger Wilco is back, and this time in full voice. Garry Owen, of "Laugh-In" fame, provides the commentary. Even more fun than the disk version.

Hell Cab. Great graphics and a cunning sense of humor make this the game to show your neighbors.

Microsoft Multimedia Golf. Though it doesn't have the high-resolution backgrounds of Links 386 Pro, this CD-ROM version of Microsoft Golf for Windows includes spectacular flybys of each hole and video golf pro tips. Compatible with Access' Links golf courses.

Under a Killing Moon. Given the strength of early previews, this looks to be one of the top CD-ROM games of 1994. It's the first CD-ROM game to use several well-known actors and include virtual reality technology.

HOW PC GAMES PLAY IN EUROPE

The PC game scene is quite different in England and Europe from that in the U.S. For a start, the PC isn't the only machine in the picture. Another factor is that England and Europe tend to lag behind the U.S. in many technical respects.

The Competition

The European hardware purchasing public is less affluent than that in the United States and yet is faced with relatively more expensive equipment.

The low end of the market is made up of kids who would buy Sega or Nintendos in the U.S. Many European youngsters shell out around £100-200 for a console, though there's a significant overlap with a second group of youngsters who persist with the classical home computer. Commodore sells hundreds of thousands of A1200s and A600s, as well as, until fairly recently, millions of C64s.

PCs and Games in the UK

Rarely are PCs purchased simply for game playing. The main reason is cost. A basic 386 PC system in the UK will set you back around £800-1000, depending on the amount of hard drive and RAM resources you get. This is without the obligatory sound card, speakers, and joystick gizmos, which will add an additional £100 to the total, giving you a layout of around $1600, before you've even fired a shot in anger at any alien scumbags. Is it any wonder why the English, hassled into poverty by the recession, would prefer to spend their hard earned cash on a $500 Amiga?

I think it's fair to say that there's a cultural difference between the two sides of the Atlantic in terms of PC usage and general computer literacy; U.K. users lag behind a couple of years. This is reflected in the number of personal computers required at home to keep us up to date with the office work, and since this group makes up the bulk of game purchasers, it's been a slow start for PC gamers over the years, a situation which is finally changing. Software sales are roughly 50-50 with those for Amiga computers for any given product.

It's only recently that the U.K. has seen widespread availability of 386 clones (about a third of PCs sold by games retailers are Amstrads, a third are badged Eastern imports, and the rest are IBMs). These PCs now are able to keep up with the fast graphics and wild sound that U.K. gamers demand.

Prior to 1993, few of the popular action games would even run on the older 286 EGA computers. Games on the PC were seen as mind-numbingly boring strategy affairs, with long drawn out scenarios that required a Ph.D. in warfare and twelve years to play. They took ages to get into and ages to lose, and the graphics were depressingly uninteresting to say the least. Flight simu-

ENTERTAINMENT SOFTWARE

lators, which took advantage of the PC's superior number crunching, were easily matched by the other computers' graphics chips, and programmers often used tricks to noticeably speed things up. The dolphinesque clicks that emanated from the minuscule internal speaker were laughable to those used to 8-bit stereo sampled sound, thundering out of your stereo system as the last alien exploded into a flaming fireball of cycling color. So what if your game ran off three floppies, required 26 disk swaps to get past the title animation, and the copy protection meant one in three loads aborted—you could live with that, couldn't you?

What's changed? The PC still has mind-numbing strategy games with the graphic prowess of a house brick, but nowadays companies such as Gremlin Graphics, Team 17, and Psygnosis have woken up to the fact that you can do animation on a PC—it does have more that 16 colors to play with; and 16-bit sound cards aren't as rare as rocking horse manure. There's a new wave of computer games about to hit the PC, and they owe their origins to the fast action multicolored worlds of the other systems mentioned. Spectacular still graphics is easy enough with 640 x 480 x 256 colors, but moving it around at 30-50 frames per second isn't as straightforward.

Conversion Problems

A game developer who has to code for widely different platforms such as the PC and Amiga faces a number of tricky problems. Since a given game usually will appear simultaneously on all platforms, it tends to be developed concurrently, rather than converted. Consoles are easier to code for because they have lower resolutions than the PC. European game developers, who are accustomed to writing games for minimal systems where there's precious little RAM to play with and disk access must be kept to a minimum as the luxury of a hard drive can't be counted on, are among the best. Their talents for squeezing the most out of very little are being applied to the PC and its unique problems. Brute force and processor power seemingly can overcome the lack of dedicated video graphics chips with scrolling hardware, sprites, and fast rendering engines.

TOP 5 EUROPEAN GAMES

Lemmings: This Psygnosis original releases as many as 100 of these stupid creatures, which duly walk over the nearest cliff, through the closest drowning pool, and into the most convenient trap. Only you can save them. The graphics are wonderful (imagine 100 sprites all doing their own thing at once). Just perfect.

Populous: Marketed by Electronic Arts and recently released at a budget price. For anyone who wants to be God—for just a while.

Zool: In this platform game from Gremlin Graphics, a cute Ninja-type character bounces around avoiding the bad guys, collecting the goodies, and killing the end-of-level guardian.

Alice in Wonderland: A great adventure in the type-in-and-go traditional sense. Graphics are extremely detailed, but the charm of the game is in its superb parser.

Lotus, The Ultimate Challenge: Flying around various circuits in an Esprit is OK, but the game really accelerates away from the rest if you play with another person. It's great fun, and the graphics whizz by so quickly the slightly rough scrolling is forgivable.

These days, most games require at least VGA, and while many will run on a 640K machine, most of the decent ones will tax 2MB of RAM and take a 3-5MB chunk of hard drive out of your way.

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Price and Piracy

Games in the U.K. are, on average, more costly than in the U.S. Usually you find a direct swap of the pound sign for the dollar sign, and it doesn't take Lotus 1-2-3 to see the exchange isn't favorable. However, things are changing with many of the best older titles being re-released at *budget* prices, usually £10-20, and these really represent good value for money.

It has to be said, and I'm ashamed to say it, but we have the best pirates in the business manning all kinds of bulletin boards. It's not unusual for a fully cracked game (that is, all copy protection vanquished and, somewhat cheekily, a whole host of cheats built into the code) to be up on a BBS before the game is launched officially. Clearly this is detrimental and is one reason why many companies are moving to the PC, where the problem is less acute. (Amiga versions of a top quality game may only ship 30,000 units in a potential market of 1.5 million machines.)

The PC world definitely is changing its face in the U.K. More of the top companies are porting their stuff to the platform, and several are developing exclusive titles for it.

U.K programmers are quit adept at squeezing the last ounce of animation power out of their computers, and to this end, you'll be seeing many more excellent action games. Platform games, football (or rather, soccer) games, blast-'em-to-bits-and-beat-the-living-daylights-out-of-the-Ninja-Nasty type of programs also will become commonplace.

—Mike Nelson

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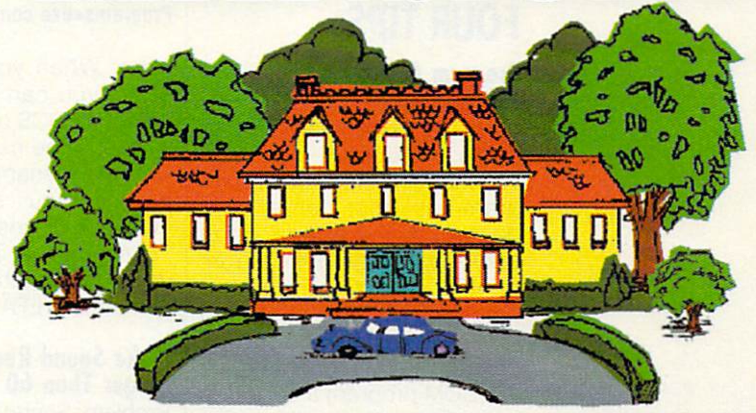

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WINDOWS WORKSHOP

Clifton Karnes

FOUR TIPS

Program Order

Problem: When you run a program by specifying its filename without an extension and there is more than one program with that name, Windows uses the extensions to decide which program to run. In other words, with the two programs MYPROG.EXE and MYPROG.COM, Windows, by default, will search for and run the COM program first. This is inefficient, however, if you use mostly Windows programs, which are EXE files.

By creating a blank sound file, you can break Sound Recorder's 60-second barrier.

Solution: Change the order Windows uses to search for programs.

Background: Both MS-DOS and Windows look for programs in a certain order. DOS first checks to see if the command issued is an internal DOS command; next it looks in the current directory and on the path for files in this order: COM, EXE, and BAT. Windows doesn't check to see if the command is internal, but it runs programs in the same order: COM, EXE, and BAT, followed by PIF.

The big difference between Windows and DOS is that Windows lets you change the order in which it runs programs. If most of the programs you run are Windows programs, which always end in EXE, then having the system search for COM files before EXE files is unnecessary overhead.

Step by step:

1. Run SysEdit and make WIN.INI active.
2. Find the Programs= entry in the [Windows] section. It will probably look like this.

```
Programs=com exe bat pif
```

3. Edit the line so it reads as follows.

```
Programs=exe com bat pif
```

Note: When you run a program, you can eliminate the search in DOS or Windows by including the extension along with the filename. For example, if you specify NOTEPAD.EXE instead of NOTEPAD, neither DOS nor Windows will search for other files named NOTEPAD.

Make Sound Recordings Longer Than 60 Seconds

Problem: Sound Recorder has a maximum default recording length of 60 seconds.

Solution: Create a blank sound file to insert in another file.

Step by step:

1. Run Sound Recorder and record for 60 seconds with your microphone turned off.
2. Save this file as BLANK60.WAV (don't forget the WAV extension).
3. Whenever you want to extend the recording time of a file, open BLANK60.WAV; choose Edit, Insert File; and insert another copy of BLANK60.WAV in the file.

Note: BLANK60.WAV is 2.5MB in size. You'll have to have a substantial amount of RAM and disk space to make sound files longer than the default 60 seconds. One solution is to make a second, shorter blank sound file to insert. I've created a file called BLANK15.WAV, which is a blank 15-second sound file. I simply insert this as many times as necessary to increase the length of BLANK60.WAV.

A Solid, Nonblinking Cursor

Problem: Windows' blinking cursor can be irritating.

Solution: Change the blinking cursor to a solid one.

Step by step:

1. Run SysEdit and activate WIN.INI.
2. In the [Windows] section, find the CursorBlinkRate= entry.
3. Change the value to CursorBlinkRate=-1.
4. You can test your cursor by running Control Panel, Desktop and clicking on OK.

Note: The default blink rate is 530, with a range of 0–1200. These numbers determine how long, in milliseconds, the cursor will be displayed, so larger numbers mean a slower cursor. The value -1 turns the cursor on. You can change the cursor blink rate in Control Panel, but you can't turn blinking off, as we have done by editing the WIN.INI file and adding a -1 to CursorBlinkRate.

Save File Manager Settings

Problem: When you set up File Manager just the way you want it, the normal way to save your settings is to select Save Settings on Exit, close File Manager, run it again, and turn off Save Settings on Exit.

Solution: Shift–double-click on File Manager's Control-menu box.

Step by step:

To save your settings at any time, simply hold down the Shift key and double-click on File Manager's Control-menu box.

Note: There is a similar (and better-known) way to save settings in Program Manager by clicking on its Control-menu box, but most people don't know you can do the same with File Manager.

These four tips are taken from my new book, Essential Windows Tools *(published by COMPUTE books). All are drawn from the chapter "52 Essential Power Tips."* ❐

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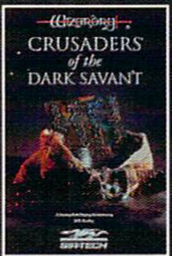
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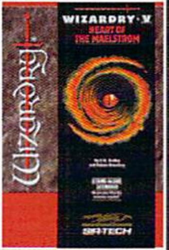
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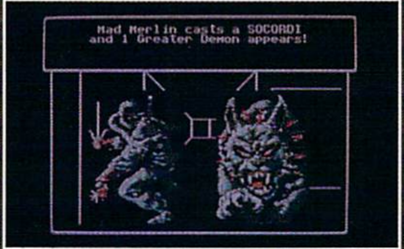

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Tony Roberts

DATA COMPRESSION: PACKING IT IN

It's axiomatic: Data expands to fill all available storage space on your disk.

When you run out of room, you can either delete files, purchase additional storage, or find some way of making more data fit into less space. For more and more computer users, the last option, data compression, is the best way to go. Let's see how compression works and look at the ways it can be achieved.

Compression is an inexpensive way to double the space on your disk.

Compression software uses a variety of algorithms to compact files. These programs usually start by looking for repeated characters in a file. For example, many people routinely press the space bar five times every time they indent a paragraph. The compression software identifies these repeated strings, and instead of storing five spaces in the disk file, it stores a code that means five spaces.

The compressed file, therefore, is a series of special codes that describe the original file. When file decompression is requested, the codes are expanded, and the file is returned to its original form and size.

Graphics, word-processing, database, and spreadsheet files usually compress well because of the high incidence of repetitive data that occurs in them. Program files, however, normally do not compress as much.

For years, telecommunicators have been big fans of file compression. Smaller, compressed files transfer much faster than uncompressed files, and that means lower connect-time charges, which in turn means lower long-distance bills. But even if you're not a telecommunicator, you may want to begin compressing some of your files to free up some disk space and to simplify file management.

Single files or groups of files can be compressed with utilities such as PKZIP and LHArc. PKZIP has become a widely recognized standard. LHArc, another well-known compression program, is freely distributed. Be aware that the compression algorithms used by these programs differ, however, so a file compressed with PKZIP can't be decompressed with LHArc.

In addition to saving space, compression utilities can take several files and combine them into one file called an archive. For example, you can gather up all the files you used to prepare last year's tax returns—spreadsheet files, word-processing files, tax-preparation software files, and so on—and bundle them into an archive called TAXES92. Copy this archive file to a floppy disk and store it with your income tax materials. When you're ready to work on your 1993 tax return, you'll have all of your 1992 documents to use as a handy reference right at your fingertips.

Or, for another example, look at your correspondence subdirectory. Does it include dozens or hundreds of memos that you keep on hand because you may want to refer to them sometime? Why not take all of your letters from 1993 and compress them into one archive called LTRS93? In addition to freeing up hard disk space, archiving your letters reduces the clutter in your correspondence subdirectory. If you ever need one of the letters in the archive, you can give a command to decompress only the one you need.

In the past few months, another type of compression—whole disk compression—has received considerable attention, thanks to the inclusion of DoubleSpace as an integral part of DOS 6. Under this system, everything that's stored on disk is compressed as it's being saved and decompressed as it's being read. And it all happens without any intervention from the user.

Disk compression may slow system performance a tad, but the payoff is that you can store nearly twice as much data on any given disk. On a fast computer, the slowdown is barely perceptible. DoubleSpace and similar utilities, such as Stacker from Stac Electronics, can provide a low-cost way to expand your system without your having to open the box and install new hardware.

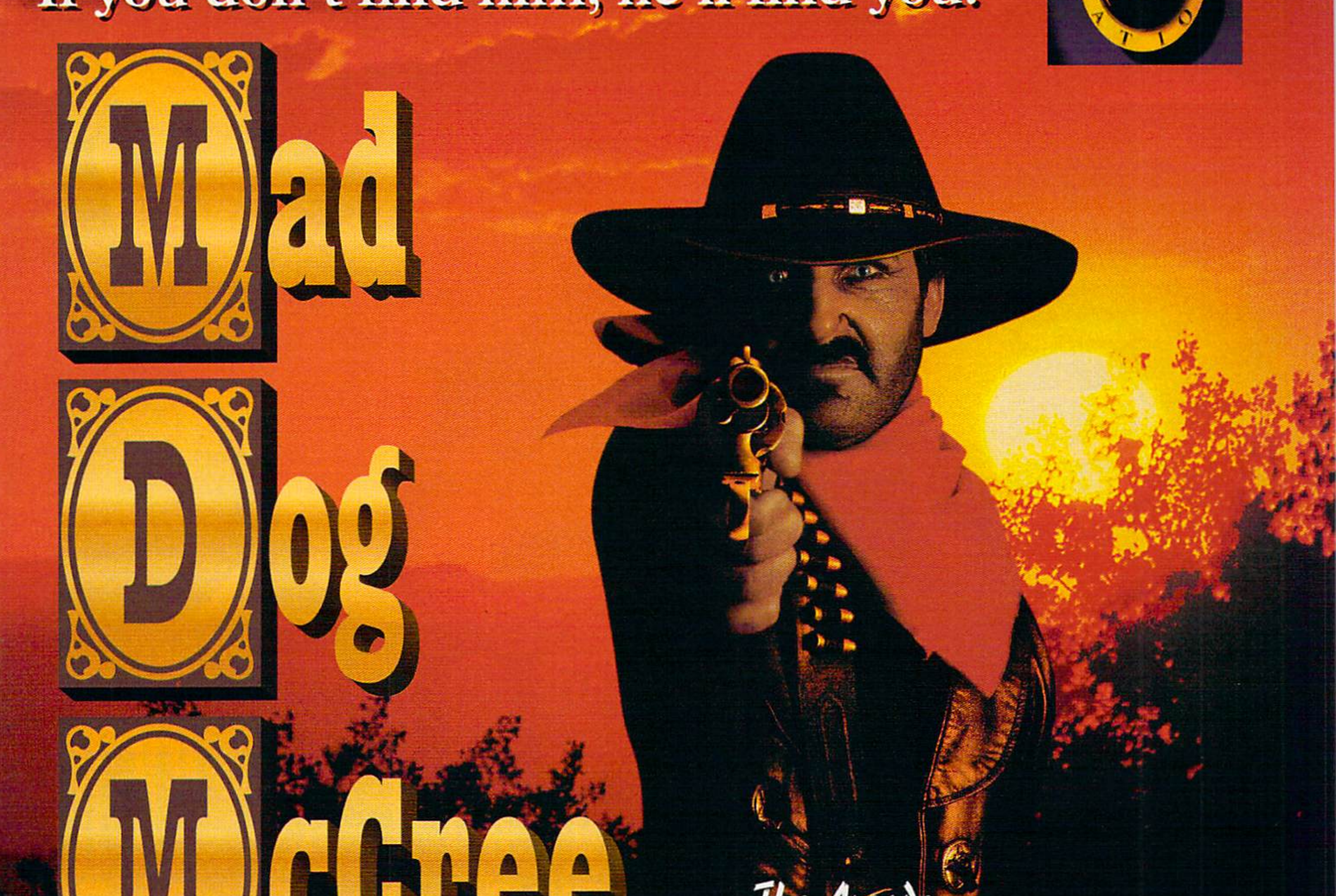
However, the inclusion of DoubleSpace with DOS 6 has fueled a continuing debate about the safety of disk compression. While the majority of users have installed DoubleSpace successfully, a few have reported problems and have experienced data loss. Most of these problems appear to be installation issues, and Microsoft's answer—a DOS 6.2 maintenance release—may be available by the time you read this.

It's clear, though, from Stacker's track record and from the experience of those who've achieved successful installation of DoubleSpace, that whole disk compression is a viable alternative to installing a new hard drive. Still, the standard computing caveat—always keep backup copies of your data—bears repeating.

If you use whole disk compression, note that you won't double the benefit by trying to combine the effects of Stacker or DoubleSpace with PKZIP or LHArc. Once a file is compressed, the whole disk compression program won't be able to do much more. ❐

HE'S HERE, ON CD-ROM

If you don't find him, he'll find you!



LIVE MOTION PICTURE ACTION™

Mad Dog McCree is known worldwide as one of the highest rated arcade games and is the first interactive shooting game with real live motion picture action. Mad Dog and his men have kidnapped the town's mayor and his daughter. To save the town, you will be challenged by a saloon full of outlaws, a hair-raising bank robbery, gunfighters, a slew of Old West ambushes, and Mad Dog himself.

Call 1-800-758-HOME or visit your local retailer

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A 3DO EXPERIENCE

Electronic Arts software for the 3DO system is about to revolutionize the way you play games. The new 3DO system delivers photo realistic graphics, CD-quality sound and gameplay so real it's hard to tell where your living room ends and the software begins.

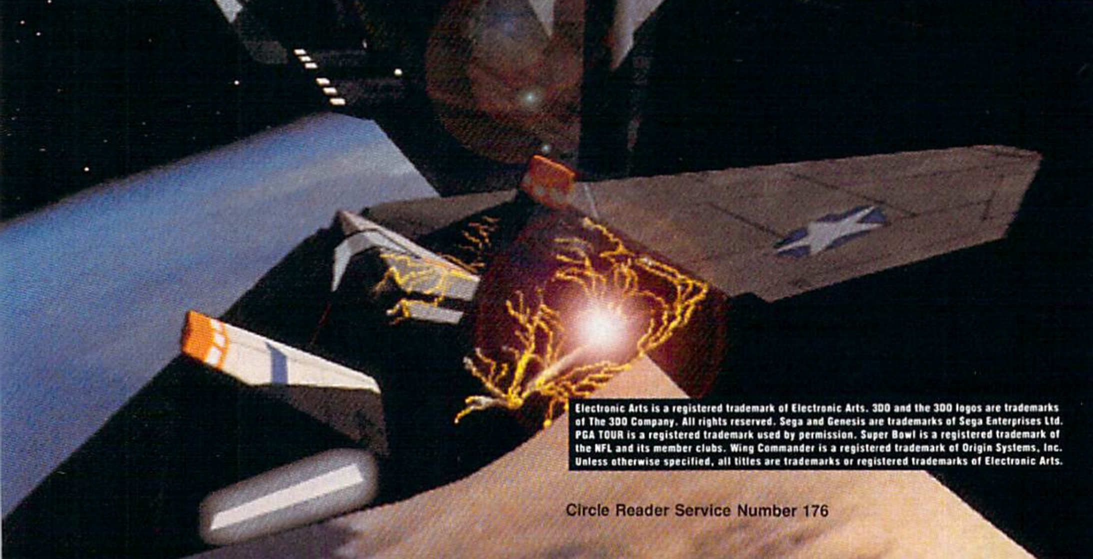
Electronic Arts has been at the forefront of innovative technology throughout our ten year history. We have supported all of the major successful hardware platforms, and led the pack onto the Sega™ Genesis.™ Now we've recognized the technological leap 3DO has to offer and we're planning to introduce twenty new titles for 3DO over the next twelve months.

3DO

THE FACE OF

Oakland
San Jose

THE FUTURE



We are developing titles with Hollywood-style special effects, full-color video and intense game-play. This new software ranges from Super Wing Commander® to PGA TOUR® Golf to Peter Pan. Grab the controls of your fighter jet and stop the alien invasion in Shock Wave™ Fight your way to the Super Bowl® in John Madden Football,™ your cleats biting into the turf. Rip through the squalid city streets, the cold, hard bite of a steel chain assaulting your face in Road Rash™ It's software as you've never seen it before. Face the future with Electronic Arts and 3DO.

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ELECTRONIC ARTS

Circle Reader Service Number 176

PROGRAMMING POWER

Tom Campbell

PROGRAMMING WINDOWS HELP FILES

To create a WinHelp HLP file, you need at least two source files. The first is a project file, with the default extension HPJ. The project file contains, at a minimum, a list of all the help source files (called topic files) in the project. The other file or files are the actual help source files, which use a default extension of RTF.

Project files are in sections and look somewhat like the INI files so common to Windows applications and the Windows system itself. At a minimum, you need a [Files] section and a list of the topic files. For example, the minimum HPJ file for a product called SuperNote might be named SUPRNOTE.HPJ and contain just one topic file in its [Files] section. It would look like this.

RTF is a minilanguage in which the keywords start with a backslash.

```
[Files]
SUPRNOTE.RTF
```

Most help files also have an [Options] section with such items as compression level, copyright, title, and so on; but you can get by just fine without it to start.

Topic files are much more complicated, even at a minimum, and that's what brought this column about. I have to create large help files frequently. They need good indexes, generous keyword lists, and lots of hyperlinks. They don't need the many impressive bells and whistles that come with the help engine, such as user-defined buttons, custom DLLs, or CD-ROM file systems. All that stuff is great, and I strongly encourage you to read the help compiler documentation. It won't take you long to realize that the Windows help system is an unsung hero in the development world. But that doesn't solve the simple problem of creating a minimal help system. The help docs just don't tell you what to leave out. So, here goes.

RTF is a minilanguage in which the keywords start with a backslash, and compound statements employ the curly braces and semicolons so familiar to C programmers. All the rest is ASCII text.

1. The file must begin with a left brace and end with a right brace.

```
{ }
```

2. The first keyword is \rtf.

```
{\rtf}
```

3. The second is the \ansi statement.

```
{\rtf\ansi}
```

4. Next, you should include a \fonttbl statement enclosed in braces. The syntax is

```
{\fonttbl{\f<number><tag><multiword font name>;} . . . }
```

where <number> is replaced by a number such as 0, 1, or 15, <tag> is the one-word font name, <multiword font name> is the typeface family name, and the three dots mean 0 or more more occurrences of the \f statement. It's much easier to see the following example.

```
{\rtf\ansi
{\fonttbl
{\f0\froman Times New Roman;}
{\f1\fdecor Courier New;}
{\f2\fswiss Arial;}}
}
```

5. Specify the default font using the \def statement. The syntax is

```
\deff<font number>
```

where <font number> is a number, such as 0.

Here's an example.

```
{\rtf\ansi
{\fonttbl
{\f0\froman Times New Roman;}
{\f1\fdecor Courier New;}
{\f2\fswiss Arial;}}
\deff0
}
```

In this case, the default is f0, for Times New Roman.

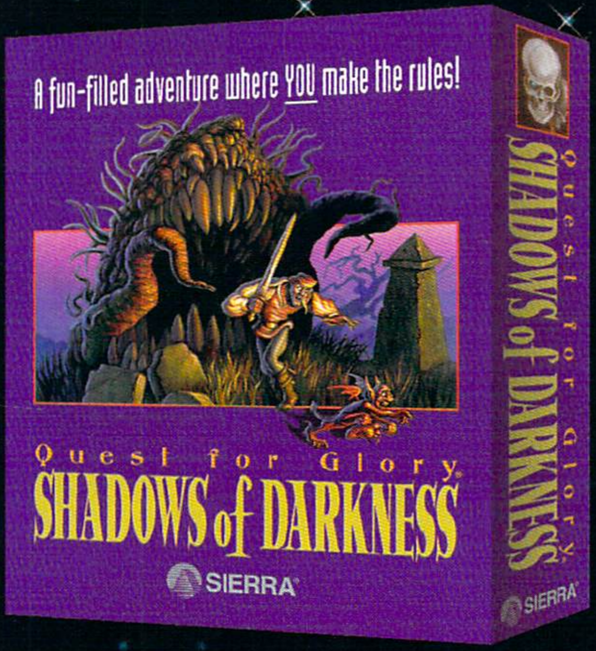
RTF is interesting in that, like most "real" programming languages, white space is irrelevant. That is, between the backslash keywords and the curly brace statements, you can use any number of spaces, tabs, or newlines—or none. The dreary part is that a simple blank line needs its own \par keyword and a tab uses the \tab keyword, instead of an ASCII 9. (This is actually good. DOS uses a different ASCII convention for blank lines than UNIX and the Mac, and IBM mainframes use something different from all of them. Consequently, RTF files offer an accurate, though bulky, means of assuring correct formatting on all computer systems.)

6. Create the topics with

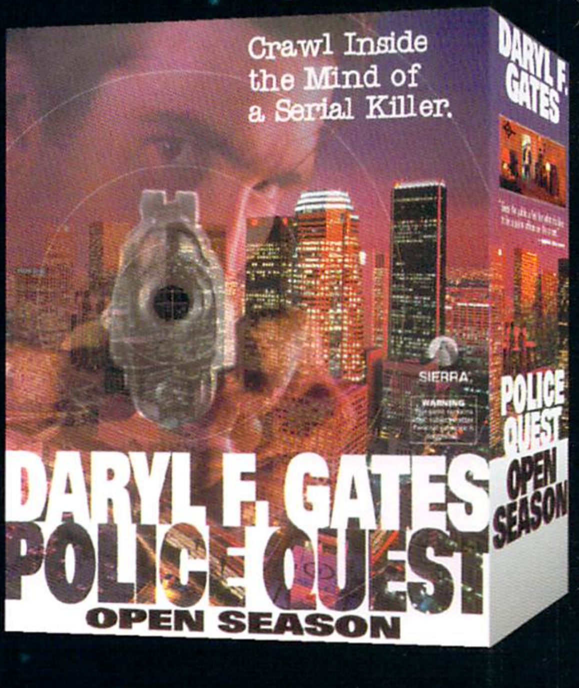
```
#{\footnote <UniqueContext>}
${\footnote <Optional Topic Title>}<Topic text>
\page
```

where <UniqueContext> is replaced by a unique context name. The name may consist of letters, digits, and the underscore character.

<Topic text> is just that—what you want to talk about in the help file. Note that newlines are ignored. To start a new paragraph, use the \par statement.


A fun-filled adventure where YOU make the rules!
Quest for Glory
SHADOWS of DARKNESS
SIERRA
Quest for Glory
SHADOWS of DARKNESS
SIERRA

FANTASY


Crawl Inside the Mind of a Serial Killer.
SIERRA
DARYL F. GATES
POLICE QUEST
OPEN SEASON
DARYL F. GATES
POLICE QUEST
OPEN SEASON

REALITY

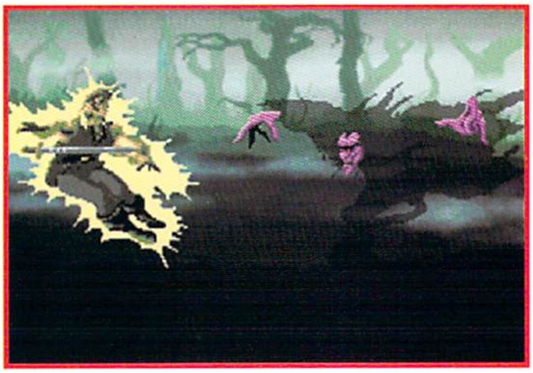
LOOK INSIDE

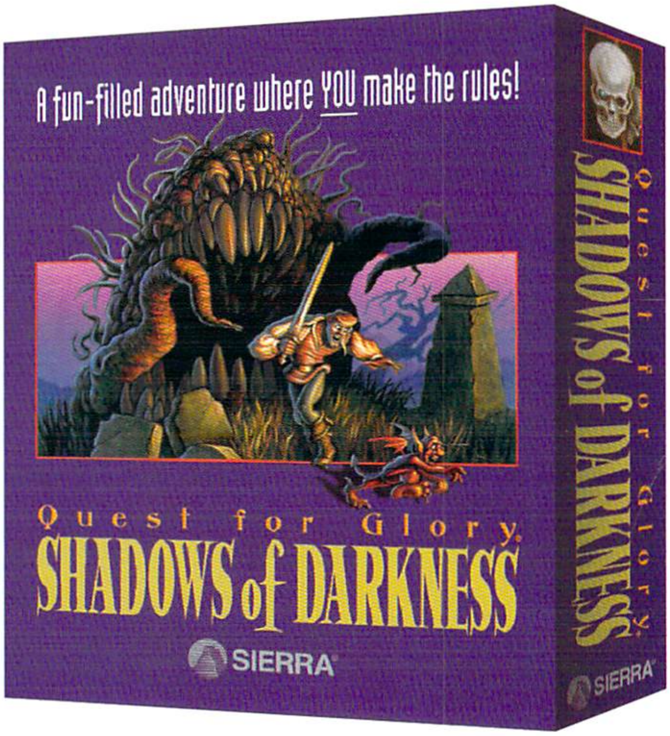
To find out why SIERRA is your *Key to Adventure*

FANTASY

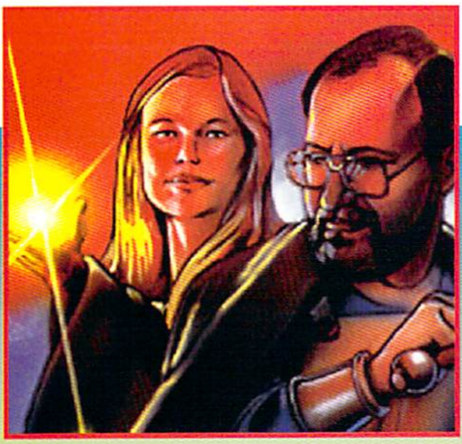
QUEST FOR GLORY®

Shadows of Darkness




A fun-filled adventure where YOU make the rules!
Quest for Glory.
SHADOWS of DARKNESS
SIERRA®
Quest for Glory.
SHADOWS of DARKNESS
SIERRA®

Save Mordavia, AND enjoy phantomful fun! This latest offering in the award-winning series was created especially for adventurers tired of playing by other people's rules! It features an advanced icon system and a combat mode that you customize to your own style.

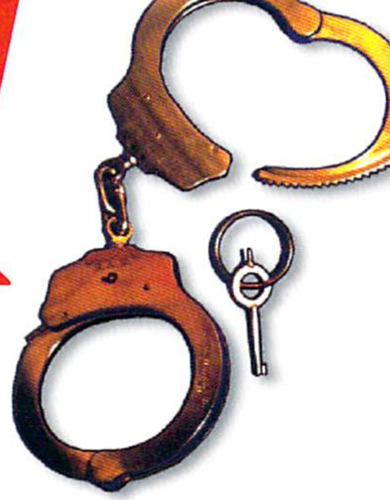


LORI & COREY COLE

Lori and Corey Cole draw upon their expertise in computer, art, theatre, and role-playing games to create a truly interactive adventure. Their celebrated games have won a myriad of awards, including *Computer Gaming World*'s Adventure Game of the Year.

SIERRA®

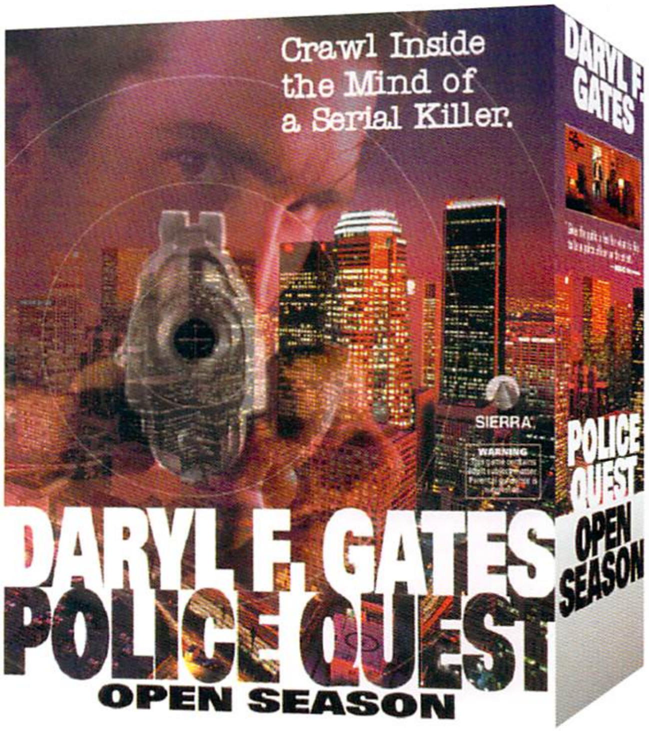
REALITY



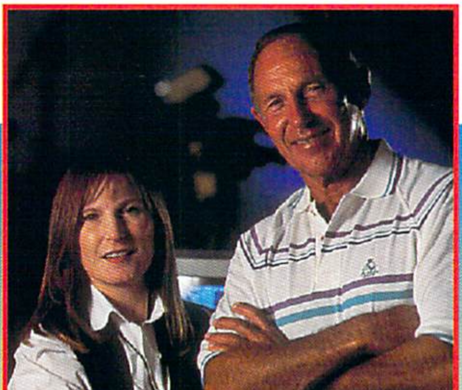
Chief Daryl F. Gates'

POLICE QUEST®

OPEN SEASON


Crawl Inside the Mind of a Serial Killer.
DARYL F. GATES
SIERRA
WARNING
DARYL F. GATES
POLICE QUEST
OPEN SEASON
POLICE QUEST
OPEN SEASON

Someone's on a killing spree, and it's up to you to solve a string of seemingly random murders. But play it by the book, or you could be the next victim. State-of-the-art digital photography and stark realism give an accurate view of what it's like to be a cop on the streets.



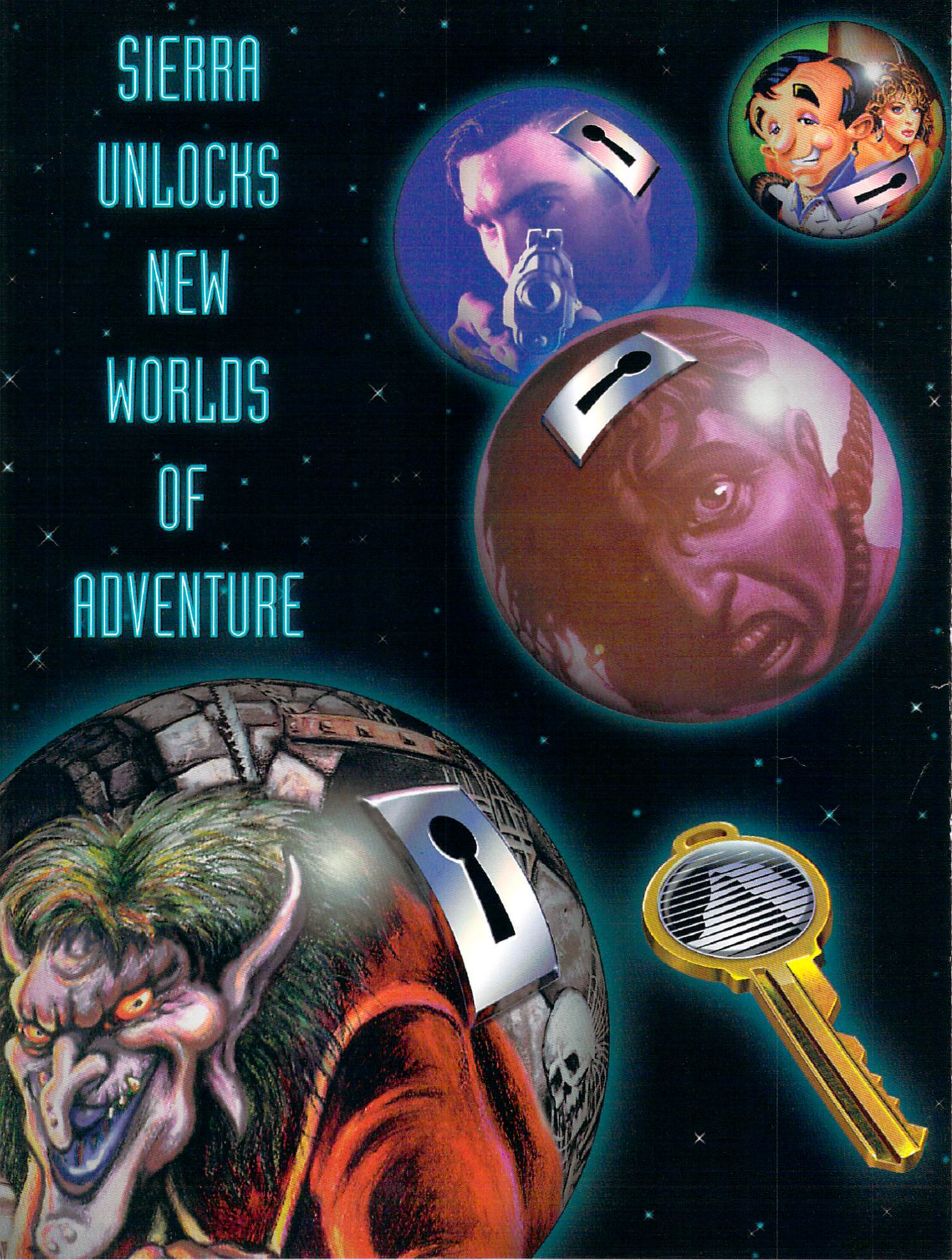
CHIEF DARYL F. GATES & TAMMY DARGAN

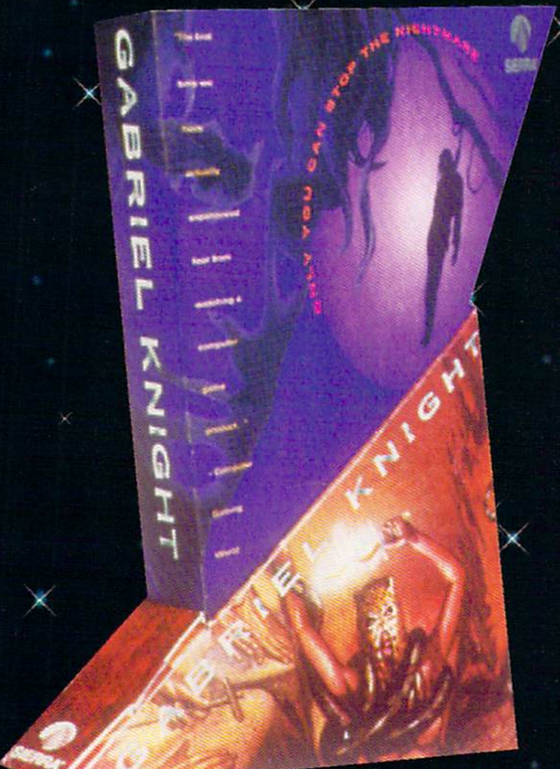
In his 43 years on the force, Chief Daryl F. Gates investigated some of the toughest serial murders of our time. *Open Season* director Tammy Dargan is a former producer of the television series *America's Most Wanted.**

SIERRA®

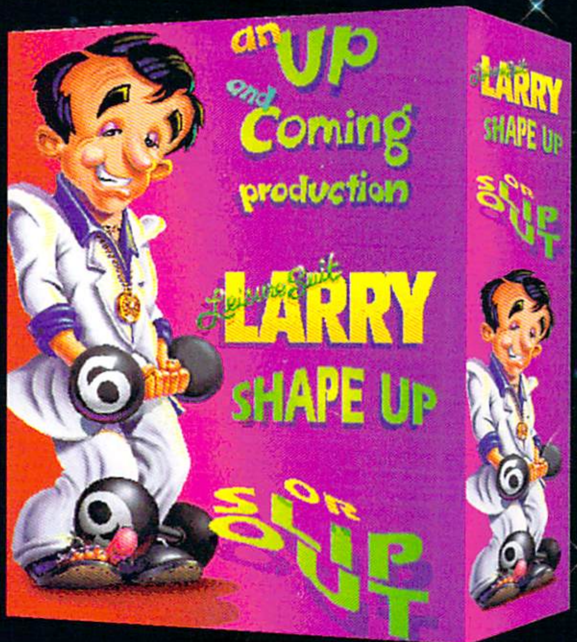
---

*This product has not been endorsed or sponsored by *America's Most Wanted.*


SIERRA
UNLOCKS
NEW
WORLDS
OF
ADVENTURE


GABRIEL KNIGHT
ONLY YOU CAN STOP THE NIGHTMARE
GABRIEL KNIGHT
SIERRA

INTENSITY


an UP and Coming production
Leisure Suit LARRY
SHAPE UP
OR SLIP OUT
LARRY
SHAPE UP
OR SLIP OUT

ABSURDITY

LOOK ON THE BACK

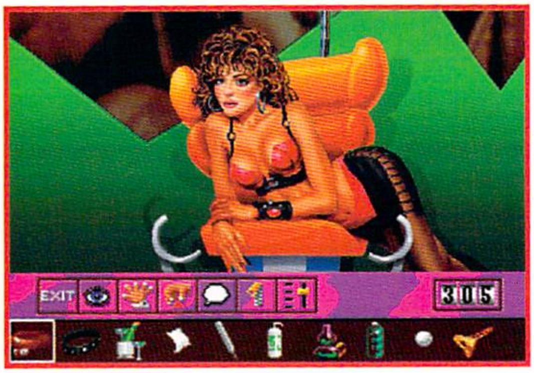
To find out how your *Key to Adventure* could be your key to big prizes!

ABSURDITY

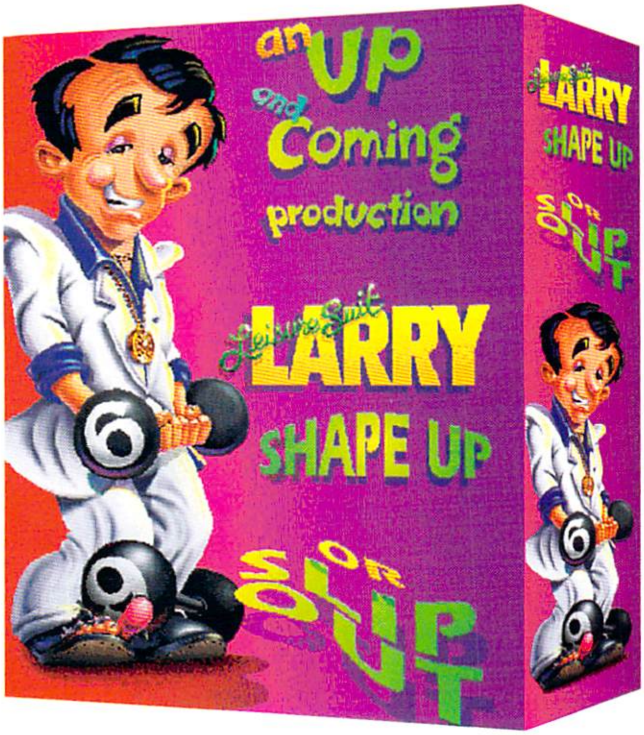
La Costa Lotta Spa
ROOM 6

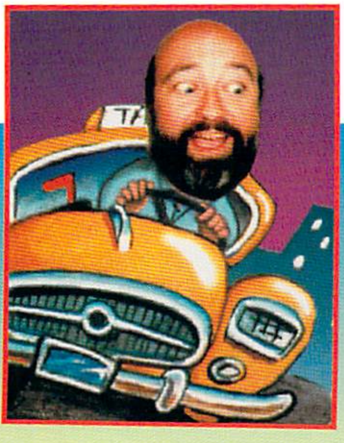
LEISURE SUIT LARRY®

Shape Up or Slip Out



This time around, Larry's at a posh resort spa, surrounded by luxury ... and nine gorgeous girls! How could he possibly mess this up? Easy! After all, we're talking about Larry. This is the longest, hardest Larry ever!


an Up and Coming production
Leisure Suit LARRY
SHAPE UP
OR SLIP OUT



AL LOWE

Game designer Al Lowe is the culprit behind the Leisure Suit Larry phenomenon. Al is a former music teacher and jazz musician, which accounts for all the sax and violins in his games.

SIERRA®

Key to Adventure Contest!

1. Remove the *Key to Adventure* card. You can also write to Sierra to receive a *Key to Adventure**. Write to:

   ***Key to Adventure* Contest, P.O. Box 485, Coarsegold, CA, 93614**
2. Take it to any participating software retail outlet.
3. Check the key sequences on the poster.
4. If your key pattern matches any pattern found on the poster, you'll win a fabulous prize from Sierra! We're giving away the following:

One* Gateway *State-of-the-Art Multimedia Computer!

Valued at $3299.00

Two* MediaVision *Multimedia Computer Upgrade Kits!

Each valued at $899.00

25* Gravis *UltraSound Sound Boards!

Each valued at $199.00

50* Sierra *adventure games!

(featured inside)

Each valued at $69.95

2,000* Sierra *hint books!

Each valued at $9.95

So why are you still sitting there? Grab your *Key to Adventure* and get going!

Gateway *State-of-the-Art Multimedia Computer!*

Fusion DoubleCD 16

MediaVision *Multimedia Computer Upgrade Kits!*

ULTRASOUND
GRAVIS

Gravis *UltraSound Sound Boards!*

Sierra *hint books!*

Check your *Key to Adventure* card at these and other participating computer retail stores:
CompUSA, Computer City, Electronics Boutique, Incredible Universe, Software Etc.

Odds of winning PC:	1 in 1,700,000.
Odds of winning upgrade:	1 in 850,000.
Odds of winning sound card:	1 in 68,000.
Odds of winning Sierra game:	1 in 34,000.
Odds of winning Sierra hint book:	1 in 850.

Eligibility requirements: All contestants must be 18 or older to participate. Employees and their families of Sierra On-Line, Inc., its affiliates, and outside materials suppliers, are not eligible. Good only in the United States and Canada. Contest void where prohibited by law. No purchase necessary to win.

For a complete list of contest rules and prizes, send a self-addressed stamped envelope along with your request by December 15, 1993.

Contest ends January 31, 1994. Write-in requests must be postmarked by December 31, 1993. Prizes must be claimed, in writing, by February 28, 1994.

Please allow 4-6 weeks for delivery of prizes after receipt of winning contest cards at Sierra.

Unclaimed prizes will remain the property of Sierra On-Line, Inc.

*while supplies last

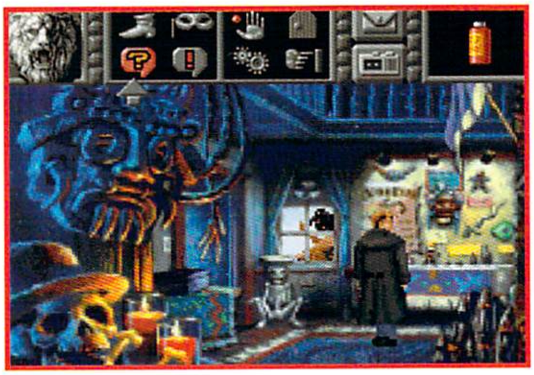
Sierra Publishing Division is a developer and publisher of premium entertainment and educational software. Sierra Publishing is a division of Sierra On-Line, Inc., located at 40033 Sierra Way, Oakhurst, Califonia, 93644.

SIERRA®

INTENSITY

GABRIEL KNIGHT™

Sins of the Fathers



GABRIEL KNIGHT
ONLY YOU CAN STOP THE NIGHTMARE
SIERRA
GABRIEL KNIGHT
SIERRA

He started out writing a book on voodoo. Now he's fighting for his very soul in this dark, erotic journey into the supernatural. Help Gabriel Knight unlock the secrets of his past, and atone for the sins of the fathers.

JANE JENSEN

Designer Jane Jensen has written horror and suspense stories for many years. She co-designed *EcoQuest: The Search for Cetus*, and is co-author and co-director of the bestselling *King's Quest VI*.

SIERRA®

The <Optional Topic Title> really isn't optional. If you want the topic to show up in the search dialog, you need it. The <UniqueContext> string is what gives it a position in the file—titles don't have to be unique, but contexts, like subroutine names, do.

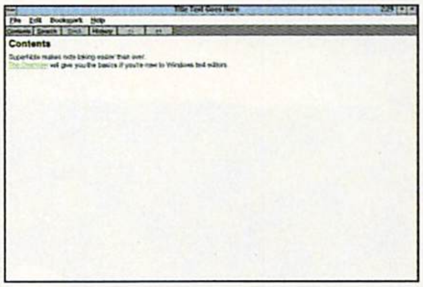
Here's an example.

```
{\rtf1\ansi
\deff2
{\fonttbl
{\f0\froman Times New Roman;}
{\f1\fdecor Courier New;}
{\f2\fswiss Arial;}}
#{\footnote SuperNoteOverview}
${\footnote Overview of SuperNote}
SuperNote makes note taking easier
than ever.
\par
\page
}
```

Why are the critical help context and topic title functions given \footnote commands? It's a kludge, that's why. Remember, RTF wasn't designed for the creation of help systems. Microsoft just chose RTF as the vehicle for help sources, perhaps because it's easy to create RTF filters for word processors.

7. End each topic with a \page statement, as shown above. You can have as many topics per file as you wish; one common convention is to have one file per menu and dialog in the application.

8. While you've just been given the absolute minimum, a help system is nothing without keywords. Keywords appear in the search dialog, using WinHelp's cool word-completion algorithm, which jumps to the first word matching the letters as you type them. You can have as many keywords as you wish per topic, and they too use a footnote (this time, the K footnote:



Creating simple help files can be easier than you think.

```
K{\footnote Overview;Starting out}).
```

Footnotes can consist of more than one word, and you use semicolons to separatethem. You can put them anywhere, but I put them right after the title.

9. Your last task is to include hypertext links within the help text. The link consists at a minimum of the {\v} command with the name of the context following the \v. Normally, you will precede it with the text you want to show in green as the highlight using the {\uldb} command with the text following the \uldb. As an example, here's a link to the SuperNoteOverview context shown in the example above.

```
{\uldb The Overview}{\v SuperNoteOver-
View}will give you the basics if you're
new to Windows text editors.
```

Technically, the \uldb isn't required. If you omit it, the context name will appear, which often works out fine in the case of SuperNoteOverView.

That's it. Fewer than ten steps as a basis for creating commercial-quality help systems with tools you already have. Your applications will have a burnished, well-rounded appearance that matches that of professional software.

Tune in again next month for an easier way! ☐

SPEAK UP!

Is there a feature topic
you'd like to see covered
in COMPUTE?
Let us know by calling
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(sponsored by Pure
Entertainment,
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California 90078).
The call will cost 95 cents
per minute,
you must be 18 or older,
and you must use
a touch-tone phone.

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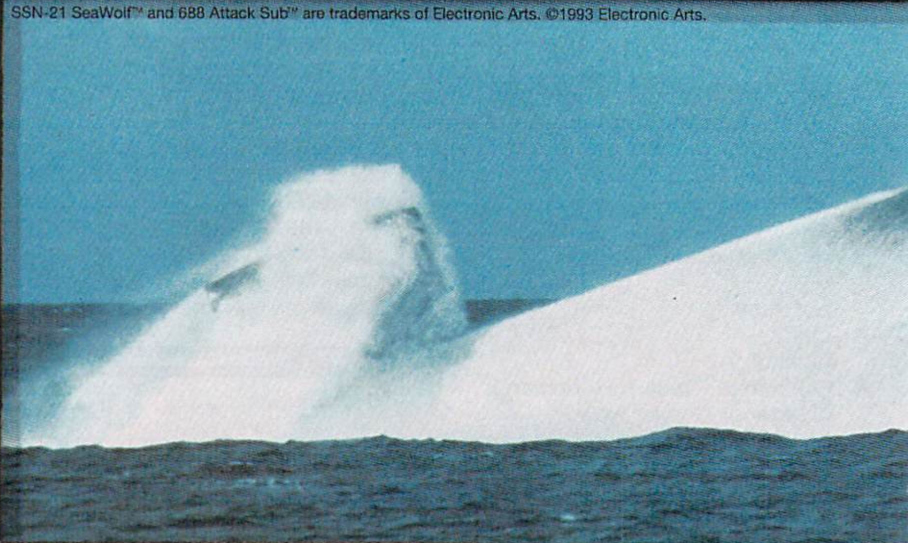
Ever wonder what it's like to have your life flash before your ears?

You'll find out when you play SSN-21 SeaWolf,™ the sequel to 688 Attack Sub.™ And the most realistic PC submarine simulation this side of Annapolis.

A TORPEDO HAS REACHED IT'S TARGET

As you skipper the world's newest, most heavily armed nuclear attack sub, no less than 100 different sound effects assault your senses via our revolutionary 16-bit full digital stereo sound.

SSN-21 SeaWolf™ and 688 Attack Sub™ are trademarks of Electronic Arts. ©1993 Electronic Arts.

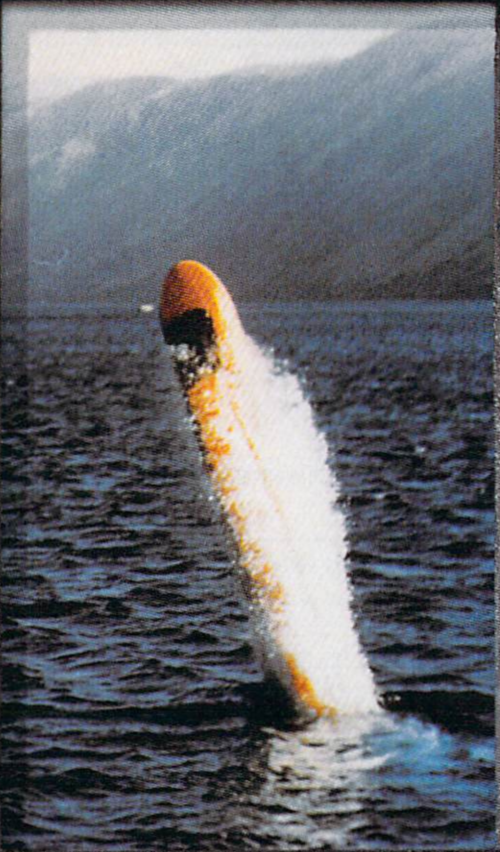


NOBODY KNOWS WHAT HEL
GIVE YOU A PRETTY GOO

You'll hear the eerie high-pitched whine of torpedoes as they home in on their targets. The menacing drone of a destroyer passing overhead.

A TORPEDO HAS REACHED IT'S TARGET

NAVY
1325
HSL-31



And damage reports from the mouths of crewmen praying they'll live to enjoy another liberty call.

Of course, it pays to

DETECTED A MISSILE LAUNCH CAPTAIN

keep your eyes open, too. SSN-21 SeaWolf™ features color motion video, 3-D underwater mapping, and vivid digitized images of more than 50 real-world ships and aircraft.

Now, take a final breath of fresh air and dive into a world where good hearing is your greatest asset.

L LOOKS LIKE. BUT WE'LL
D IDEA HOW IT SOUNDS.

Sure, it'll test your nerves. But what were you expecting, the Love Boat?

ELECTRONIC ARTS

Circle Reader Service Number 184

READERSHIP SURVEY

We want COMPUTE to be as useful and interesting as possible and to provide you with the coverage you want. Please help us by taking a moment to fill out and send us this questionnaire. You can mail the completed questionnaire to us (photocopies are fine) or fax it.

Mail:
COMPUTE Readership Survey
324 W. Wendover Ave., Ste. 200
Greensboro, NC 27408

Fax: (910) 275-9837

What computer(s) do you own or plan to buy?

Own / Plan to Buy
- ☐ ☐ 8088/8086, brand ________
- ☐ ☐ 80286, brand ________
- ☐ ☐ 80386, brand ________
- ☐ ☐ 80486, brand ________
- ☐ ☐ Pentium, brand ________
- ☐ ☐ Notebook/laptop, brand ________
- ☐ ☐ Macintosh, model ________
- ☐ ☐ Game system, brand ________
- ☐ ☐ Other ________

Which video display system(s) do you use?
- ☐ Monochrome
- ☐ Hercules
- ☐ CGA
- ☐ EGA
- ☐ VGA
- ☐ Super VGA

Which peripheral(s) do you own or plan to buy?

Own / Plan to Buy
- ☐ ☐ 5¼-inch disk drive
- ☐ ☐ 3½-inch disk drive
- ☐ ☐ CD-ROM drive
- ☐ ☐ Dot-matrix printer
- ☐ ☐ Fax modem
- ☐ ☐ Hard disk
- ☐ ☐ Laser printer
- ☐ ☐ MIDI device
- ☐ ☐ Modem
- ☐ ☐ Mouse
- ☐ ☐ PostScript printer
- ☐ ☐ Sound card
- ☐ ☐ Speakers
- ☐ ☐ Tape backup system

How much memory does your computer have?
- ☐ 640K or less
- ☐ 1MB
- ☐ 2MB
- ☐ 4MB
- ☐ 8MB
- ☐ 16MB

Which operating system(s)/environment(s) do you use?
- ☐ DR DOS version ________
- ☐ Microsoft Windows version ________
- ☐ MS-DOS version ________
- ☐ OS/2 version ________
- ☐ Other ________

Which parts of the magazine do you like the most?
- ☐ Art Works
- ☐ COMPUTE's Getting Started With
- ☐ Editorial License
- ☐ Fast Forward
- ☐ Features
- ☐ Feedback
- ☐ Game Insider
- ☐ GamePlay
- ☐ Hardware Clinic
- ☐ IntroDOS
- ☐ Multimedia Spotlight
- ☐ New Multimedia Products
- ☐ News & Notes
- ☐ News Bits
- ☐ Personal Productivity
- ☐ Programming Power
- ☐ Reviews
- ☐ Test Lab
- ☐ Tips & Tools
- ☐ Windows Workshop

Which of the following computer-related topics do you like to read about?
- ☐ Databases
- ☐ Desktop publishing
- ☐ Disk management and MS-DOS
- ☐ Education
- ☐ Games and entertainment
- ☐ Graphics (paint, draw, or CAD)
- ☐ How to upgrade your PC
- ☐ Integrated software
- ☐ Local area networks (LANs)
- ☐ Money management
- ☐ Multimedia
- ☐ New computer technologies
- ☐ New hardware
- ☐ Pen computing
- ☐ Programming
- ☐ Spreadsheets
- ☐ Telecommunications
- ☐ Windows
- ☐ Word processing
- ☐ Other ________

Where do you use your PC?
- ☐ Home
- ☐ Work
- ☐ School
- ☐ Other ________

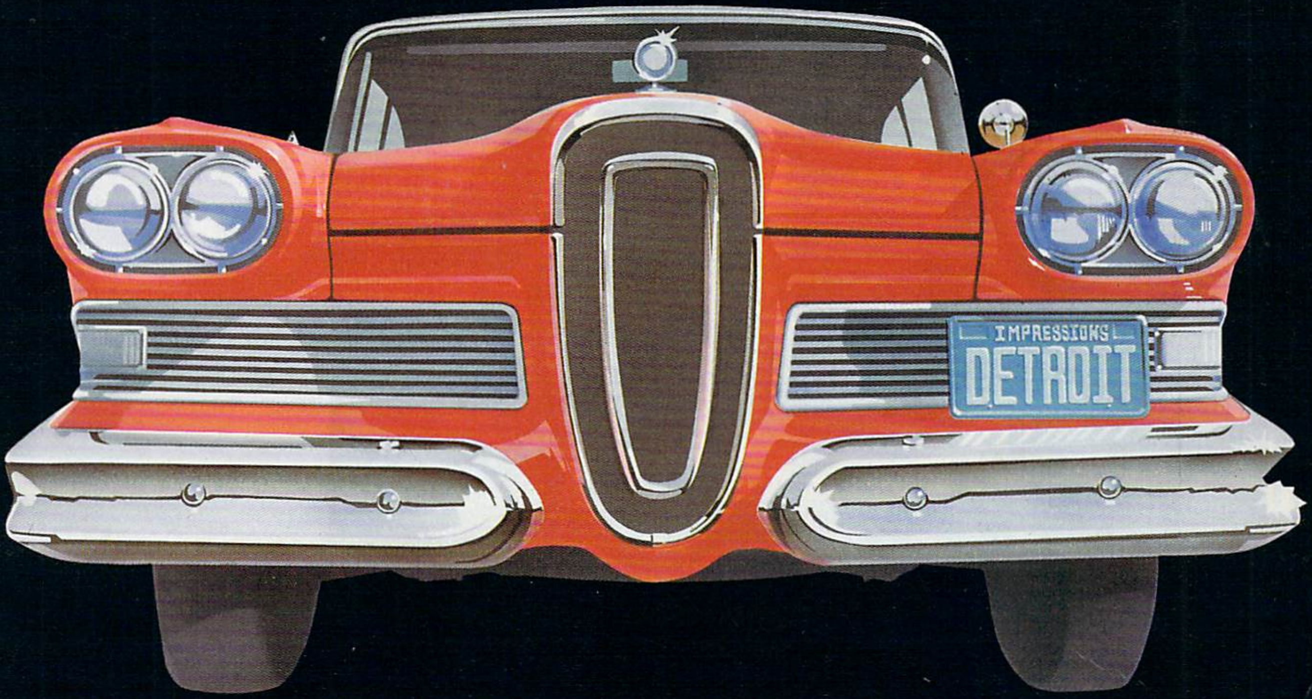
Where did you get this copy of COMPUTE?
- ☐ Subscription
- ☐ Newsstand
- ☐ Other ________

How long have you been reading COMPUTE?
- ☐ Less than two years
- ☐ Two years or more

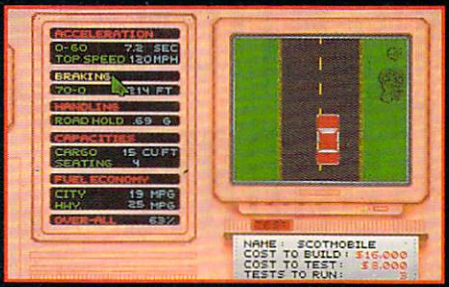
If you have a modem, which online service(s) do you use?
- ☐ America Online
- ☐ BIX
- ☐ CompuServe
- ☐ DELPHI
- ☐ GEnie
- ☐ Internet
- ☐ Prodigy
- ☐ Other ________

Comments ________

DETROIT


IMPRESSIONS
DETROIT

Can You Change Automotive History?


ACCELERATION
BRAKING
HANDLING
CAPACITIES
FUEL ECONOMY
OVER-ALL

0-60 7.2 SEC
TOP SPEED 120MPH
70-0 214 FT
ROAD HOLD .69 G
CARGO 15 CU FT
SEATING 4
CITY 19 MPG
HWY. 25 MPG
OVER-ALL 63%

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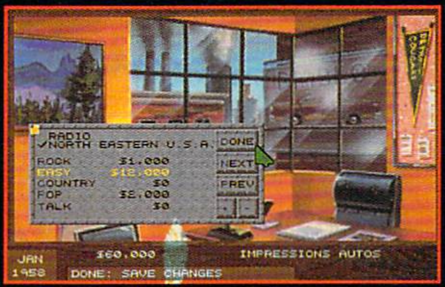
COST TO BUILD : $16.000
COST TO TEST : $8.000
TESTS TO RUN : 3

Design cars and put them through their paces with a variety of performance tests!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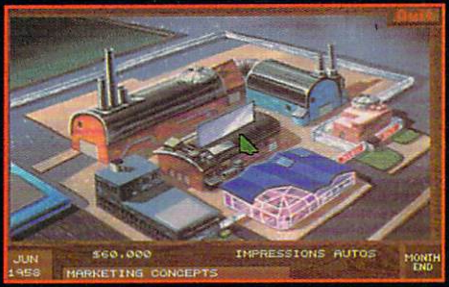

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Circle Reader Service Number 183

IBM PC VGA Screenshots

IT'S YOUR STATE OF MIND

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LOGIC GOODBYE

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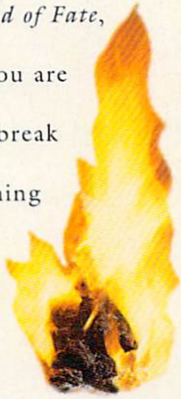

Shadow

Sunlight

Grasp *The Hand of Fate* and kiss conventional logic goodbye.

THE HAND OF FATE

Westwood
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Circle Reader Service Number 195

Mark Minasi

THE TWILIGHT OF THE PC

As the PC reaches the end of the trail, what alternatives await us just over the horizon?

If you've been following the industry recently with an eye to buying a new computer, you've probably noticed an important trend. PCs are less expensive than they've ever been.

There's nothing new in that. PC prices have been on a constant downward spiral. But, if you've been in the market for very long, you've probably noticed another important trend: The computer you want to buy—the one with the latest technology, the most RAM, and the biggest mass storage capacity—has always been just out of reach. Until lately.

The low prices for the best of the best should make PC lovers jump for joy, but there is a dark side to this phenomenon because just as the rapid drop in prices has spurred sales, it may also signal the end of the line for PCs.

Since shortly after the arrival of the PC in 1981, the market could be separated into three distinct levels. A basic computer system that could run the low- to midrange programs of the day cost around $1,000.

Even five years ago, $1,000 would buy you enough XT power to run WordPerfect 5.0 and Lotus 1-2-3 2.0.

If you had a little more cash, or higher expectations for your machine in terms of speed and processing power, the next price point, around $3,000, got you either a power user's clone or a low-end machine from a major computer company.

If you had a lot of cash and were running major applications that required lots of horsepower like a huge database or CAD software, you could get a top-of-the-line machine with the best display, largest and fastest hard drive, and so on, for $6,000–$11,000.

PC prices have always dropped at a steady rate; in general, today's $3,000 power workstation is tomorrow's basic PC. It goes through this metamorphosis to a basic PC because the basic requirements of software grow over time. For example, an 8088-based XT will run WordPerfect 5.1 with no problems, but 6.0 doesn't run very well on an XT. Even on a 16-MHz 286 AT clone it seems slow.

While these price points have remained steady for close to a decade, the drop in PC prices in the past two years is unprecedented. The reason for the price drop is that the PC world is different today. The difference can be seen on the high end.

Since today's high-end machine is tomorrow's midlevel machine, we should be able to predict what tomorrow's midrange machine will be. We look up from our fire-breathing desktops to see what's on the horizon. And we see nothing.

What did a top-of-the-line computer look like two years ago? A 486DX2/66 with 16MB, SCSI controller, 380MB hard disk, CD-ROM drive, local-bus video, and 17-inch monitor would have been a high-end computer. That would have cost about $7,000–$9,000.

How about a top-of-the-line computer today? It looks pretty much the same, except that it would probably have a 520MB hard disk and would cost around $4,500.

The high-end machine is rapidly becoming the midrange machine, and there is nothing taking its place. As I see it, the big issues are the following:

- Processors are maxing out.
- PC buses have unacceptable speed limitations.
- PC BIOS cannot exceed 1GB hard disk size.
- Networking isn't built into DOS or Windows.
- PC operating systems lack good memory management, multitasking, and security.

We haven't seen a new PC processor in two years—not even a faster version of an existing chip.

You may be thinking, What about the Pentium? Well, what about it? The Pentium may turn out to be a practical chip one day, but that won't be today, or even by the time you read this.

The Pentium is plagued by heat problems and production difficulties. Intel designed the Pentium with a 0.8-micron resolution on the chip mask, requiring the Pentium chip to be quite large as chips go and making it harder to build in quantity.

And at 66 MHz, the Pentium doesn't really produce real-world speed that's much in excess of that of a 486DX2/66; the real improvement will be seen if a 100-MHz version ever appears. As you may have read a few months ago in "Hardware Clinic," Intel won't be ramped up to produce Pentiums in any quantity until late in 1994.

So the basic CPU has been in a developmental stall for a couple of years. Maybe we've gone as far as we can without a major CPU change. It happened to the 6502 series that powered the first generation of 8-bit computers like the Apple II and the Commodore 64 and the Z80 that powered the CP/M machines that paved the way for the PC. We have to learn to accept the fact that you can only improve an existing technology a certain amount before you need to scrap it and start from scratch.

The notion that PC-compatible processors are maxing

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out in power is more serious than it appears on first glance.

Microcomputers got their start in the mid 1970s as hobbyist machines and as machines that a computer junkie could control completely. But one of the things that made the PC popular was the relatively high amount of computing power that you could buy for a relatively small amount of money. The idea that Intel-compatible microprocessors have increased in power by a factor of about 100 in ten years while mainframe processors have only jumped by single-digit factors in that time is one of the things that has fueled the move to client/server architecture.

But would corporate America invest all that time and money if it knew it was moving from one dead-end architecture to another?

What's faster than the Pentium? These days, lots of things are. But first and foremost is the DEC Alpha chip. Not only will it run NT programs very quickly, but it can also run regular old DOS and Windows programs (under NT, of course).

But a chip maker recently told me, "The Alpha's obsolete already. A whole bunch of new 128-bit superscalar chips will be out before you know it, and they'll cost about what the Alpha does . . . or they may be cheaper."

IBM's Power PC chip is a real alternative. It will offer desktop systems in the $10,000 range that will outpace a 486 by a factor of about 4. Count on the $10,000 price to come down quickly.

Originally, IBM and Apple were set to work with each other on the Power PC and its accompanying operating system, Taligent. Taligent was supposed to be essentially Macintosh System 8 and to run on Macs, PCs, and Power PCs. But now IBM has backed out of the Mac-compatibility promise, giving Apple good reason to want to sell Power PCs for less money than IBM. And if neither IBM nor Apple sells cheap Power PCs, any company can buy the Power PC chip set from Motorola and undersell IBM and Apple.

The next problem in the PC architecture is the speed of buses. The ISA and EISA buses operate at only 8 MHz, and the MCA bus operates at 10 MHz—and this in an age of 66-MHz computers.

Yes, there is a local-bus standard, in the VESA (Video Electronics Standards Association) local bus, but it's not much of a standard. I've seen a fair number of compatibility problems with boards using the VESA standard.

State-of-the-art buses should transport 64 bits, not 32, and should allow bus mastering (intelligent boards transporting data between themselves without CPU intervention). You probably know that bus mastering is already available with the MCA and EISA buses, but it's not part of either VESA or PCI, the new Intel local-bus standard.

Some help may come from the PCMCIA (Personal Computer Memory Card Industry Association) bus slot type. PCMCIA boards are smart enough to be able to configure themselves when inserted, and they can be changed while the computer is running. These are both powerful features. But PCMCIA does not support bus mastering yet, and it ticks along at a mere 8 MHz.

Ever notice that the *Enterprise's* chief engineer, Geordi LaForge, never has to screw around with cables?

Every time I'm fumbling around with a LAN cable or installing a new SCSI device, I find that Geordi comes to mind. Apple's Newton can

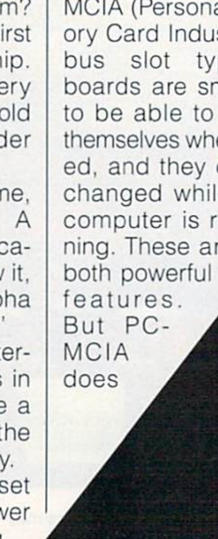
ACCESS Brings You a Virtual World Interactive Movie!

What Reviewers are Saying:

"Lots of games claim to be pushing the envelope—*Under a Killing Moon* blows it to **smithereens!**"
—William Trotter, *PC Entertainment*

"*Under a Killing Moon*...the **most elaborate** graphic adventure to date. A ground breaking CD adventure!"
—Joyce Worley, *Electronic Games*

"*Under a Killing Moon* combines the best elements of movies and computer games and creates an amazing interactive experience that's **better than either of them.** It literally pulls you into the screen."
—Denny Atkin, Entertainment Editor, *Compute Magazine*



This category-creating Interactive Movie from ACCESS Software goes light years beyond any other product labeled "interactive." *Under a Killing Moon* takes you to the streets of post World War III San Francisco and casts you into the role of Tex Murphy, Private Investigator, who first appeared in *Mean Streets*, then *Martian Memorandum. Under a Killing Moon* is a Virtual World full of people and places so richly detailed, you'll feel like you're actually there.

beam its information from one Newton to another. Why can't my laptop beam data to and from my main desktop PC?

Another communications problem that plagues PC users is setting up and maintaining a network. LANs are a major pain for several reasons. Some of the most important reasons stem from the general problem of keeping wires in the walls attached to PCs without any breaks, cracks, nicks, cuts, or bruises. That problem applies to all computer communications. But the PC adds an extra element of trouble with its antediluvian operating system, DOS and Windows. DOS was not designed with networks in mind. File sharing was a notion tacked onto the side of DOS, and networks become part of DOS workstations with the inclusion of temperamental device drivers.

By contrast, the Mac's operating system was built with networking in mind from the very beginning. It was fairly lame networking—a serial port connection no faster than 0.24MB per second—but the underlying architecture makes adding a high-speed network like Ethernet a simple matter.

NT and UNIX are examples of microcomputer operating systems that are designed to network, but DOS will never be NT.

Which brings me to PC operating systems. DOS was an obsolete piece of garbage back in 1987, but we still use it. We use it for varied reasons, but the main one is inertia. What we have in the DOS and Windows environment is adequate. But our use of the PC is limited terribly by DOS and Windows. There's the annoying 640K limitation. Getting around it with DPMI (DOS Protected Mode Interface) or XMS (eXtended Memory Specification) code is cumbersome and apparently poorly understood by programmers. It can be quite a trick to get a number of DOS and Windows programs to work together.

DOS is inflexible. It's necessary to reboot your system every time you make any change to CONFIG.SYS or AUTOEXEC.BAT. We take it as a given, but why must it be that way? Other operating systems don't require this of you. The product manager of Windows NT told me, "If you ever have to reboot your computer after you've got NT up and running, then we've failed in our job."

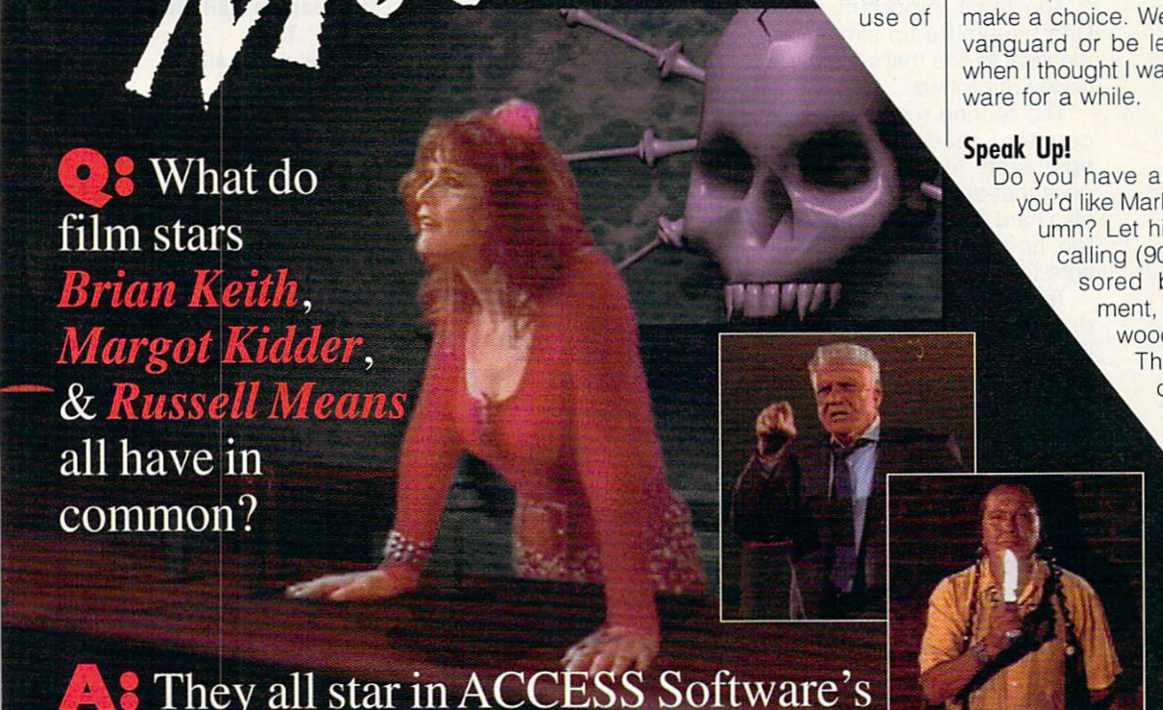
DOS doesn't support true multitasking; it's still quite possible (in fact it's simple) to crash a Windows communication program by accessing some large file in one program while Windows communication goes on in another program.

In every computer generation, progress and innovation go on for years. It seems for a while that the sky's the limit. But the constant need to support the old while inventing the new eventually dictates that nearly all of the industry's time is taken up with the old, leaving nothing for the new. That generation of hardware and software eventually becomes entrapped by the fact that it's good enough.

Soon, we PC users may have to make a choice. We can either join the vanguard or be left behind. And just when I thought I was done buying hardware for a while.

Speak Up!

Do you have a hardware problem you'd like Mark to tackle in this column? Let him know about it by calling (900) 285-5239 (sponsored by Pure Entertainment, P.O. Box 186, Hollywood, California 90078). The call will cost 95 cents per minute, you must be 18 years of age or older, and you must use a touch-tone phone. ❐



UNDER A Killing Moon

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TIPS & TOOLS

Edited by Richard C. Leinecker

Creating a tip for COMPUTE, saving your setup, and zeroing out deleted files

Tips Ahoy

This column is dedicated to making your life easier. These tips represent the best of our readers' sage advice on subjects ranging from DOS prompt hints to application shortcuts to Windows tips. And the tips I receive are getting better. This morning I decided to use the first four tips I opened and after that rejected less than 50 percent.

But that's not the end of it. If for one single month I didn't get submissions, you'd read a column entirely written by yours truly. I'd also like to see some areas given more attention. That way, "Tips & Tools" would be even more useful for more people. Lastly, I'd like you to have the experience of seeing your byline in this magazine. Here are some tips for sending in tips.

The most important rule: Don't submit a tip similar or identical to one that's been recently published.

The second rule: Neatness counts. I read hundreds of tips each month, and the ones that are hard to read are also hard to accept. Handwritten tips are OK; just make sure they're legible.

Try to think of tips that'll appeal to a wide audience. We like to please as many folks as possible with each tip. Some excellent tips don't make it because they're too specialized.

Short tips are fine (and sometimes they're priceless). For debug scripts you need to include source code.

I'd like to add more application tips. Stick to the major applications, though. Access, dBASE, Excel, Lotus, Paradox, Word, WordPerfect, WordStar, and Works are all good examples of applications that are widely used. Batch file, QBASIC, and debug tips that perform useful functions are welcome. Several specific things I'd like to see are using PKZIP to compress a large directory to multiple disks, doing high-density disk copies with a single pass, and playing notes through sound cards. Windows tips are especially welcome.

RICHARD C. LEINECKER
REIDSVILLE, NC

What's Your Type?

Here's one I learned the hard way. Always have your hard drive type written down in a safe place. That way, if your CMOS loses its information or the battery runs down, you can restore the hard drive settings with no difficulty. All of the other CMOS settings are easy enough to get right, but your hard drive probably has several cryptic setup numbers that are essential.

When your system boots, press the key that brings up the CMOS setup screen (it's usually the Delete key). Then write down all of the hard drive descriptor numbers. You may be able to send your CMOS setup screen directly to your printer by pressing the Print Screen key.

KELLEY MARTIN
ABINGDON, MD

Multiple Cleans

In your September 1992 issue, you published a debug script that creates a file called CLEANDEL.COM. It deletes a file and, for security, zeroes all of the information that was in the file. I found this very useful, but it's limited because it only accepts one filename. I wrote a batch file which calls Cleandel from a DO loop, thus allowing wildcards and up to three possible file specifications.

As a safeguard, I also test for *.* and display a warning message with an opportunity to abort. Here is the program listing for ZERODEL.BAT.

```
@ECHO OFF
CLS
IF "%1"=="" GOTO USAGE
IF "%1"=="*.*" GOTO WARNING
IF "%2"=="*.*" GOTO WARNING
IF "%3"=="*.*" GOTO WARNING
:DOIT
FOR %%r IN (%1 %2 %3) DO
  CLEANDEL %%r
GOTO END
:WARNING
ECHO.
ECHO ALL files will be
  permanently deleted.
ECHO Is this what you want to do?
ECHO LAST CHANCE
ECHO.
ECHO Press Ctrl-C to abort.
PAUSE
GOTO DOIT
:USAGE
ECHO.
ECHO USAGE ZERODEL %%1
  %%2 %%3
ECHO.
ECHO Example: ZERODEL *.BAK
  *.OLD *.TXT
ECHO will delete all BAK, OLD,
  and TXT files.
ECHO.
:END
```

BOB INDOVINA
PITTSFORD, NY

Summary to the Rescue

In my office we use WordPerfect and frequently have more than one person working on a document. It can be terribly frustrating trying to find a piece of correspondence someone else created.

I found the document summary function to be an invaluable tool in solving this dilemma. The document summary shows when the file was created, the last revision date, the name and type, the author, the typist, the keywords, the subject, the account, and an abstract of the first 400 characters of the document. The dates are automatically generated, but the other entries must be filled in by the user. If you don't need a summary, press F7 when the screen appears.

To set up the document summary function for all files, follow these steps.

1. Press Shift-F1 (Setup).
2. Press 3 or E to select Environment.
3. Press 4 or D to select Document Management/Summary.
4. Press 1 or C to select Create Summary or Save/Exit and select (Y)es.
5. Press F7 (Exit) to return to the editing screen.

NANCY L. NEWTON
DAVENPORT, IA

No-Skid Keyboards

I love to get ahead of the computer by typing in the next file to run along with its command line arguments. It makes me feel like I'm not wasting my time while I wait for the system to complete an operation. There's only one problem: What if I change my mind? How do I cancel a series of commands already entered? The answer is, I can't.

It happens to me mostly when I'm compiling a program and in a rush. I'm just about done with the task at hand, and someone's anxiously awaiting a call from my modem to get the revised version. Just as the compiling is about to finish, a zillion errors appear, and the program goes on to link nonexistent files.

Of course, compilers aren't the only things prone to this sort of problem. I'm sure in your computing career there have been many times you've wished you could put on the brakes and cancel what you'd typed. Well, relax; I have a solution—it's a program called CTRLC.COM.

To use it, just type *ctrlc* from the DOS prompt. The program is a TSR, so once it's loaded, it's there until you reboot. The program looks for a Ctrl-C key, and anytime it gets one, it clears the keyboard buffer. Now, when I've typed in the next set of commands and I get errors, I just press Ctrl-C, and the keyboard buffer is cleared. A word of warning is in order. This utility may not work if you have other TSRs that trap the keyboard. But as a DOS process under Windows, it's fine.

You can type in Ctrlc using the DOS Debug command or Tip_tool, which can be downloaded from the COMPUTE area on America Online or from CompuServe or GEnie. If you are using Debug, make sure the DOS program called Debug is in your path or the current directory. In these examples, the italic text is what the computer prints; the roman text is what you should type. One way to be sure you get these programs exactly right is to have someone read the numbers to you as you type them in. Another way suggested by one of our readers is to read the numbers into a tape recorder and then play them back as you enter the program code.

```
debug ctrlc.com
File not found
-e B8 09 35 CD 21 89 1E 3F
-e 01 8C 06 41 01 B8 09 25
-e BA 1C 01 CD 21 B4 31 BA
-e 20 00 CD 21 06 50 2B C0
-e 8E C0 26 80 3E 17 04 04
-e 75 0E E4 60 3C 2E 75 08
-e 26 A1 1C 04 26 A3 1A 04
-e 58 07 2E FF 2E 3F 01 00
-e 00 00 00
-RCX
CX 0000
:0043
-W
Writing 0043 bytes
-Q
```

The checksum value (see the July 1993 "Tips & Tools" for the new Checksum program) is 04863.

RICHARD C. LEINECKER
REIDSVILLE, NC

Correction

TDOS.BAT and DDOS.BAT, published in the November "Tips & Tools" each have a minor error that prevents them from working. Here is the corrected listing for TDOS.BAT.

```
@SET OP=%PROMPT%
@SET PROMPT=$T$_

@SET PROMPT=%OP%
```

Here is DDOS.BAT.

```
@SET OP=%PROMPT%
@SET PROMPT=$D$_

@SET PROMPT=%OP%
```

The blank line between the second and third lines is necessary.

ROBERT BIXBY
GREENSBORO, NC

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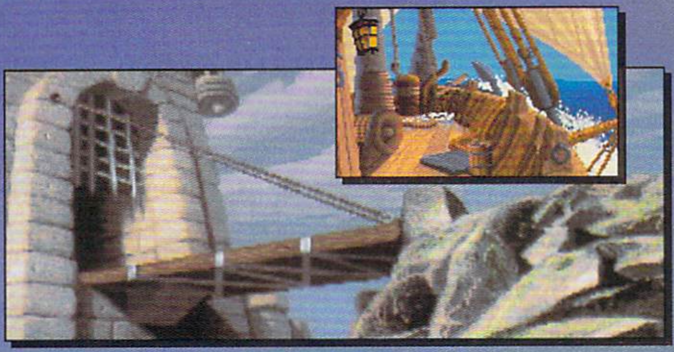

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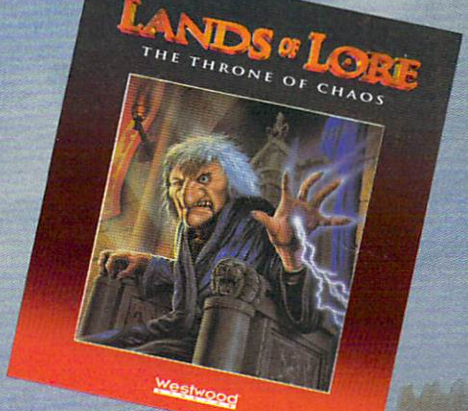

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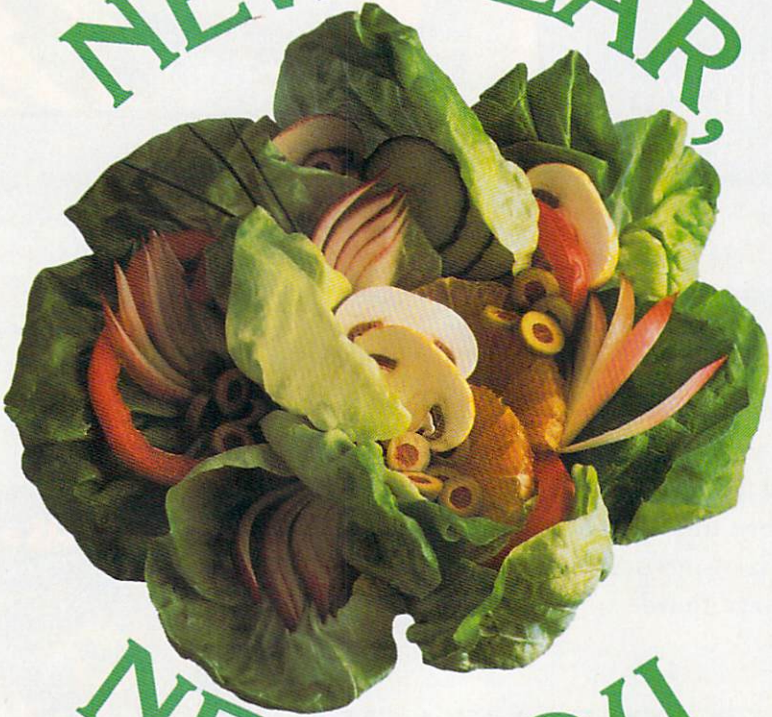
Circle Reader Service Number 132

This year, your computer can help you keep your resolution to lose weight, eat better, and exercise more regularly.

NEW YEAR, NEW YOU



Whether you're ready or not, the new year is upon us, bringing with it the timeworn tradition of New Year's resolutions, those promises that you make each year to live life to the fullest, to be a better person, and, most urgently, to improve your physical condition. Although these may seem like simple goals on January 1, at least one tends to fall by the wayside the next day when you walk into a kitchen full of leftover turkey and holiday candy.

But 1994 can be different. You can keep your resolution to shed those extra pounds and develop a sensible diet. Your computer can help with diet programs that make it easier to manage your diet and watch your weight loss. Many of them also help you design and monitor a fitness regimen.

The software you choose will ultimately depend on your lifestyle and goals, but there are certain features that you should look for in any program. The first is good nutrition, says Dr. William R. Fackler, a Richardson, Texas, pediatrician who has used Diet Analyst from Parsons Technology. A program should stress healthy eating habits and should contain reliable nutritional information. But

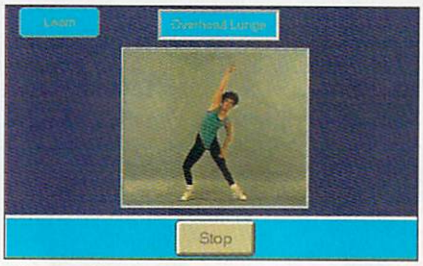
By Lisa Young

before you select any diet program, you should talk with your physician, says Dr. Fackler. It's important to take into account any medical problems that would require a special diet or any fitness limitations that would restrict activity.

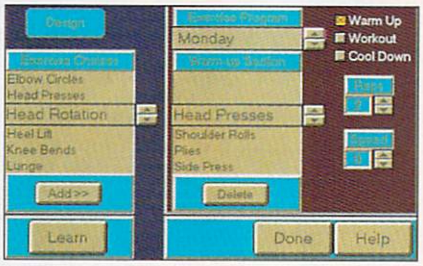
Harry Barney, associate professor in the School of Applied Health Professions at the University of Connecticut and a user of another program, Fitness Software Systems' Nutrition Expert, for nearly two years, recommends that you select a program that provides detailed feedback. It's essential that you understand why a particular food is good for you and why others are not. The educational value of a program is important in helping you maintain a healthy diet after you've lost weight. Barney also recommends that you choose a program that you can personalize. Because everyone has specific needs, it's important to find a program that will treat you as an individual.

Organize Your Appetite

One of the biggest challenges when you begin a diet program is knowing where to start and how to get organized. No diet program is going to be successful if you don't monitor your eating and fitness habits. Knowing the quantity and nutrient content of what you have eaten can be a determining factor in losing weight.


Learn
Overhead Lunge
Stop

Fitness Partner can be your coach.


Design
Exercise Choices
Elbow Circles
Head Presses
Head Rotation
Heel Lift
Knee Bends
Lunge
Add>>
Learn
Exercise Program
Monday
Warm-up Section
Head Presses
Shoulder Rolls
Plies
Side Press
Delete
Warm Up
Workout
Cool Down
Reps
Speed
Done
Help

Design your own workout.

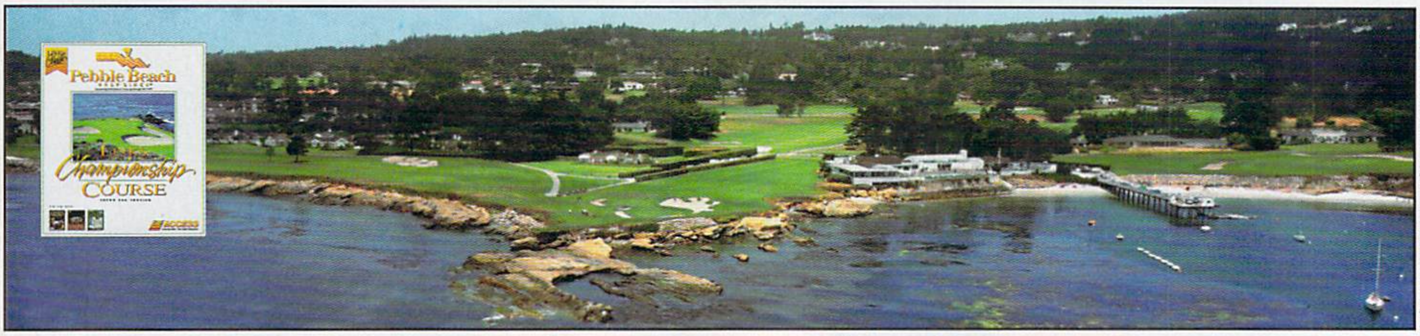
"Most times, poor nutrition can be directly attributed to a lack of understanding of how foods and their nutritional components affect our bodies," says Michael J. Harnad, president of Fitness Software Systems. "Knowing what your present requirements are allows you to make the dietary adjustments to lose or gain weight."

Harnad had been an amateur bodybuilder for nearly 13 years but felt that he was not competing at his full potential. The problem, he discovered, was a lack of organization. Without a detailed nutritional plan, it was easy for him to overeat slightly, producing a bit of flabbiness that cost him points during competitions. Using his master's degree in computer science, Harnad developed software programs to help regulate his nutritional and training regimens.

"It started as a personal project, and then I discovered that other people were interested in it, too," he says. "To achieve fitness, one must commit to a lifestyle that includes regular exercise and sound nutrition. This means knowing what exercises to perform and what foods to eat."

Nutrition Expert uses your age, sex, height, weight, and activity level to develop a personal profile. Then it uses that profile to help with meal planning and diet analysis.

This user-specific response is one of the program's most valuable features, according to Harry Barney.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"People are really hungry to understand what they should be doing on a personal level," he explains. "Diet is a very individualized thing."

Nutrition Expert analyzes your diet for carbohydrates, protein, fat, sodium, cholesterol, amino acids, and various vitamins and includes a 500-food database that you can personalize by adding your favorites.

Barney says the program is easy to use and adapts to your changing needs. Once you reach your weight loss goal, you can redesign your profile to develop a maintenance program.

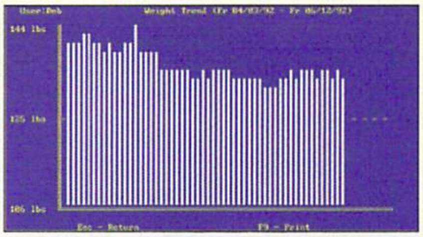
Only a combination of good nutrition and fitness habits will lead to better health, Harnad believes, so he developed another program, Training Expert, to help you plan a fitness routine.

Training Expert compiles a personal profile based on your height, weight, and training goals and prescribes a customized workout designed from 75 varied fitness routines.

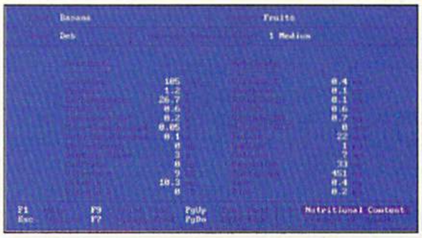
Both programs—designed to be used together—include graphic features to help track your progress.

Searching for Discipline

Craig Leonard, a technical sergeant with the 114th Fighter Squadron in the Oregon Air National Guard, had trouble finding the discipline to maintain his weight at military standards, so he turned to his computer and DietPro by Lifestyle Software Group. Leonard finds that it's hard to cheat when you have to account daily for every morsel of food you eat.



Diet Balancer charts your progress.



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Banana                                Fruits
Deb                                   1 Medium

                   105                                 0.4
                   1.2                                 0.1
                  26.7                                 0.1
                   0.6                                 0.6
                   0.2                                 0.7
                  0.05                                   0
                   0.1                                  22
                     0                                   1
                     3                                   7
                     0                                  33
                     9                                 451
                  10.3                                 0.4
                     0                                 0.2
F1        F9               PgUp             Nutritional Content
Esc       F7               PgDn
```

Diet Balancer tells what's good for you.

"I have problems maintaining my discipline, [but] I've found that this program really works," Leonard says. "I've made recommendations to the medical hospital at the base to include [DietPro] in its library for anyone who is having problems [with weight control]."

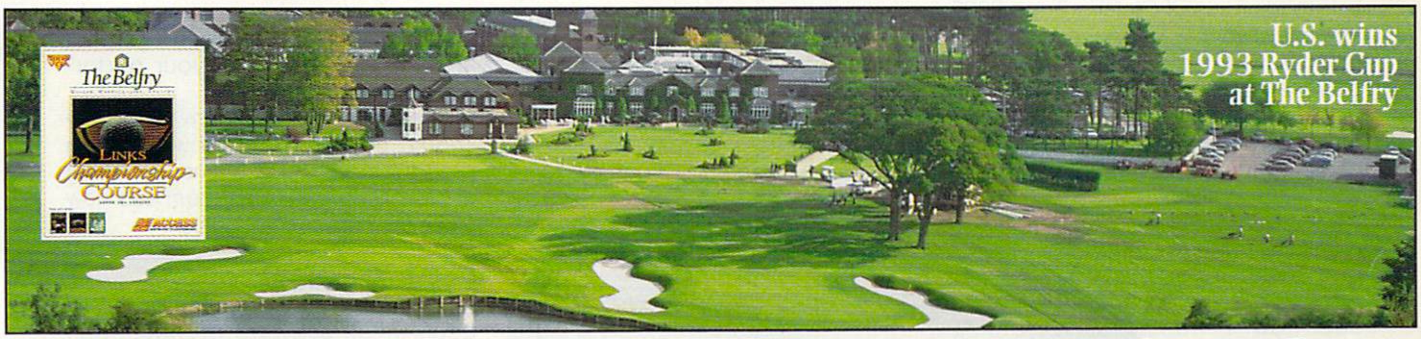
Every morning, Leonard uses the program to plan his day, and each evening, he makes sure that everything he ate is listed in the computer. At the end of each week, he prints a compilation of his exercise and eating habits for that week. He checks his progress and can tell what nutrients he lacks or where he has overindulged.

DietPro analyzes 36 nutrients in more than 5000 foods from the Department of Agriculture's food list and from fast-food chains. You can also enter your own foods and recipes, an option that Leonard enjoys.

"It's a pretty powerful option," he says. "Not everyone consumes everything, so to be able to [analyze] your own recipes is useful."

DietPro also offers an extensive list of activities and allows you to develop a fitness plan based on your own personal profile.

"You have to take the average ...profile with most programs," Leonard explains, "but with DietPro, if you have a low metabolism, you can adjust the program to account for that."



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Circle Reader Service Number 252

Scared Healthy

For some, weight loss goals may be dictated by health, not just a desire to look and feel better. That's how Dieter's Edge 2000 was born.

"Seven years ago, my doctor scared me into a diet, and I lost 60 pounds," says Fred Shadko, developer of this program. "I wrote a little program to help me with that. When I showed it to other people, they were also interested."

Distributed by LivingSoft, Dieter's Edge 2000 can help you balance your intake of protein, fats, and carbohydrates as well as achieve targeted minimums and maximums of cholesterol, sodium, fiber, vitamins, and other food components. The program has a database of more than 2000 items, including products from seven fast-food chains.

One unique capability of the program is that it can determine your personal break-even point based on how your body reacts to your diet and exercise in a 30-day period, Shadko says. Your break-even point is the number of calories that your body needs to maintain your current weight and activity level. Once you have determined this, you can adjust your calorie intake to safely lose weight.

Evelyn Richards, a retired Xerox salesperson, used Dieter's Edge 2000 for nearly five months and lost about 40 pounds. She found that entering her personal data was fun.

"It got to be kind of a game," Richards explains. "It was very motivational to see the numbers change and the graphs come up and to see how I was doing. I looked at the graphs daily because I set daily goals."

Entering this personal nutrition and fitness data was also a motivational factor for certified financial consultant Rusty Welch, who has written off nearly 30 pounds using Dieter's Edge 2000. Learning about the nutritional content of his favorite foods was also rewarding, he says.

"I had previously just counted calories, and this really opened my eyes to overall nutrition," Welch explains. "It was a real education."

To help you stay within the nutritional boundaries you've established, Dieter's Edge 2000 also includes a treat feature, which will calculate the allowable portion size of any food you want to eat. For example, if you crave a hot-fudge sundae, this program will tell you what size sundae you can eat without blowing your diet.

"The single biggest hazard is people getting discouraged," Shadko explains, "so we give them the ability to have a treat."

Reversal of Fortune

As a pediatrician, Dr. Fackler understands the importance of good health, but two years ago, his was questionable. Since then, Fackler has adjusted his lifestyle, using Parsons Technology's Diet Analyst . He has reached his personal weight goal, lowered his cholesterol from about 240 to 180, and reversed the clogging of one artery.

"It's not a diet program; it's a lifetime eating program," Fackler says. "It has taught me to select the healthy foods and ignore the others. This is the first program that I have been able to stick with."

Diet Analyst helps you manage your health program by tracking 26 nutrients from a database of 1700 foods, including brand-name products and menu items from 13 fast-food chains. You can also monitor your exercise regimen and generate a variety of reports, such as an exercise log, an account of your current nutritional status, and a compilation of the data for a single day or a number of days.

ExerCitement from Computer Athlete turns exercise into an arcade game.

Fackler uses his Diet Analyst twice each day for about five minutes. He records everything he eats—even the binges and mistakes—so that he can accurately determine how he's doing. Fackler also recommends the program to his older patients and their parents.

Nutrition Counts

As a personal trainer, Tona Hilwig recommends ways to help clients develop a personal weight loss program. Diet Balancer by Nutridata Software helps her clients understand the nutritional content of foods, she says. It teaches them to think about what they eat and how they can maintain a healthy diet.

Diet Balancer tracks 26 nutrients, including calories, fat, cholesterol, and fiber, and has a database of more than 1700 foods, including products from 13 fast-food chains. You can also add your favorite foods to the database. If you must minimize certain things in your diet, such as fat or sodium, Diet Balancer can help you plan meals. The program also includes a selection of prepared menus.

One feature that is important to Hilwig and her clients is the graphic section that can track your performance for up to 60 days.

"The charts show them what they should be doing and how they are progressing," she explains, speaking of her clients. "It helps them see how close they are to their goals."

Reach Your Goal

Once you've reached your weight loss goal, these software products can help you maintain a healthy lifestyle.

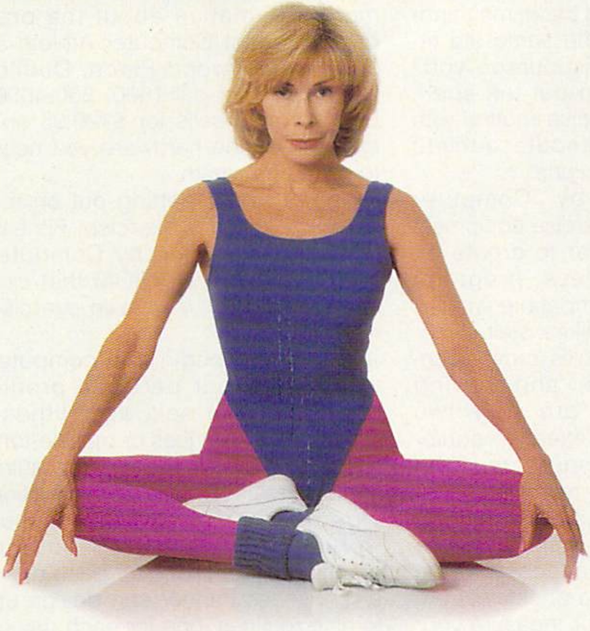
Sharon Brehm began using Diet Expert by Expert Software to help maintain her weight and plan a healthier diet. Through the program, she has learned the fat and nutrient content, as well as the caloric value, of different foods.

Diet Expert's database lists the nutritional content of 2300 foods and can help you track items that you may be trying to avoid, such as sugar, salt, and cholesterol. The program analyzes your current diet for 30 nutrients to help you overcome excesses and deficiencies, and it analyzes your current fitness plan to develop an exercise regimen based on your age, sex, weight, and frame.

"I liked the low price and flexibility of the program," Brehm says. "If you just wanted to plan a few meals, you could

Longevity Magazine's Workout Videos For An Ageless Body

REJUVENETICS.



SHE'S 55! Kathy Keeton, the publisher and president of *Longevity* magazine, stars in **REJUVENETICS** and **MORE REJUVENETICS**. These two new video workouts are specifically designed to slow down the effects of aging on the body and actually turn back the biological clock for a stronger, more youthful body. **REJUVENETICS** features non-aerobic ballet, t'ai chi, and yoga movements.

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Call **800-527-2189** and ask for Department R, or send $14.99 plus $3.50 ($8.00 outside U.S.) shipping and handling for each video to: Best Film & Video Corp., Dept. R, 108 New South Road, Hicksville, N.Y. 11801.

Sim City 2000 Design Contest

Maxis and COMPUTE Publications are looking for the very best, original cities designed with the new Sim City 2000 from Maxis. All winning cities will be included on one of COMPUTE's Winning Cities Disks. Each winner will receive $50 plus a software package from Maxis and a game hint book from COMPUTE. So put on your city manager's hat and design your best cities.

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Official Rules
NO PURCHASE NECESSARY

1. Entries must be your original work and never have been distributed by electronic means. All winners will be required to affirm this in writing.

2. Submit as many entries as you want, but we cannot consider cities which have been distributed on disk or are available on any BBS or commercial telecommunications service such as CompuServe or America On-line.

3. All entries must be received no later than April 1, 1994. Print your name, address, daytime phone, and social security number along with your disk to Sim City 2000 Contest, COMPUTE, 324 West Wendover Avenue, Greensboro, NC 27408.

4. Entries must be created with either the MS-DOS or Macintosh versions of Sim City 2000. Cities created with the original Sim City will not be accepted. Entries may be submitted on either a Macintosh 3-1/2 inch floppy disk or a MS-DOS 3-1/2 inch or 5-1/4 inch floppy disk. A separate copy of this entry form must be submitted for each city submitted. Readable photocopies of this entry form are acceptable.

5. The staff of COMPUTE magazine will handle the judging. The decisions of the judges is final as to all aspects of any entry, including similarity to any entry. There will be at least five winners, but there can be as many as twenty winners depending on the quality of the entries. Winners will be selected on the basis of their originality, uniqueness, complexity, balance, general appeal and use of the new features in Sim City 2000.

6. Winners will be notified by mail by September 30, 1994.

7. The contest is opened to residents of the United States and Canada, except Quebec. Full-time, part-time & previous employees of COMPUTE Publications International Ltd., General Media International Ltd. and Maxis, their immediate families and their advertising agencies, are ineligible for the contest.

8. Contestants must assign the copyright in their entries to COMPUTE using the attached form. All winning entries become the property of COMPUTE Publications International Ltd. Sorry, we cannot return any entries.

9. The approximate value of each of the prizes awarded is as follows: software $50, hint book $15, and cash $50.

10. This contest is void where prohibited or restricted. All winners will be required to submit an affidavit of eligibility, including permission to use winners name and photo for promotional purposes without further compensation; failure to return this affidavit within ten days will forfeit prizes. Neither COMPUTE nor Maxis is responsible for delayed or misdelivered mail. Taxes are winners responsibility. No alternative prizes or cash equivalents of prizes will be awarded.

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Your Name____________________
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use it for a few days, but if you wanted to drastically change your eating habits, you could plan meals for up to a year."

Monitor Your Progress

Other software programs that help monitor your progress toward better nutrition and fitness include NutritionPro by ESHA Research; Santé by Hopkins Technology; Nutri-Calc by CAMDE; NutriBase by CyberSoft; and Diet Simple, Diet Simple Plus, and Diet Easy by N-Squared Computing.

NutritionPro calculates the nutritional values of 2000 foods and can track excesses and deficiencies in your diet. You can also plan a fitness workout cycle from a database of 110 fitness activities. NutritionPro is also available in a scaled-down student version.

Santé monitors your progress by analyzing your food intake for 30 nutrients. It maintains a database of 3000 foods. The program also determines your daily calorie need based on a personal profile and can help you develop a weight loss plan. Colorful charts and graphs display suggested caloric and nutrient breakdowns based on the most recent government recommendations.

Nutri-Calc assesses foods and recipes for 30 components and compares the results to U.S. recommended daily allowances or your own dietary goals. The program comes with a database of 1600 foods, including fast foods and prepared foods, and you can add your favorite foods and recipes. You can also buy an additional food database that includes 1800 more listings. One of Nutri-Calc's advantages is that it will display ratios such as calcium to phosphorus or polyunsaturated fat to saturated fat.

NutriBase, an unusually comprehensive diet tracker, lists the nutritional content of more than 30,000 foods, including the offerings of 44 national chain restaurants.

N-Squared Computing usually develops programs for professional use but has also produced three scaled-down programs for use by individuals. Diet Simple, Diet Simple Plus, and Diet Easy each contain a database of 2025 foods (other versions of Diet Easy listing 5000 and 8500 foods are also available).

Diet Simple tracks 28 components in the foods you select and graphs the results by the percentage of the U.S. recommended daily allowance that is satisfied. Diet Simple Plus, an extension

Fitness I/O

Although you know that exercise is a necessary component of weight loss, does the thought of spending endless hours doing the same mindless routines with the same old fitness equipment discourage you? Your computer can put the spark back into your exercise routine with programs from Computer Athlete and Computer Directions.

ExerCitement by Computer Athlete links your exercise equipment and home computer to create an arcade-game fitness program. ExerCitement is compatible with all brands of exercise bikes, stair-climbing machines, treadmills, cross-country ski machines, and rowing machines. There are only two requirements: Your exercise equipment and your computer must be located in the same room, and your computer must have a game port.

You control the game with two directional buttons attached to the machine by Velcro; a photoelectronic eye and a reflector measure your speed. A 12-foot cable connects your computer's game port to the exercise equipment base and communicates your movements to the computer.

As you start exercising, you become a contestant in a race where your motions directly correspond to those of the computer athlete. The program has five different race sequences (one for each of the machines mentioned above). For example, you could cycle down a winding road, row through open waters, or bound across the craters of an alien planet—the race scenario used with the stair-climbing machine. However, you can choose any game, regardless of the equipment you own. Besides choosing the game you play, you can also designate the speed of the race; it can be set fast enough that even expert arcade players are challenged.

You score points in each race by dodging obstacles, avoiding menacing characters, and demolishing your opponents. For every 1000 points earned, you move to the next level and a new world.

ExerCitement runs off a floppy disk and requires 512K of RAM. For more information about the program, contact Computer Athlete at 5193 Betonywood Place, Dublin, Ohio 43017, or call (800) 860-4506. ExerCitement sells for $129.95 and includes all the hardware you need to run the program.

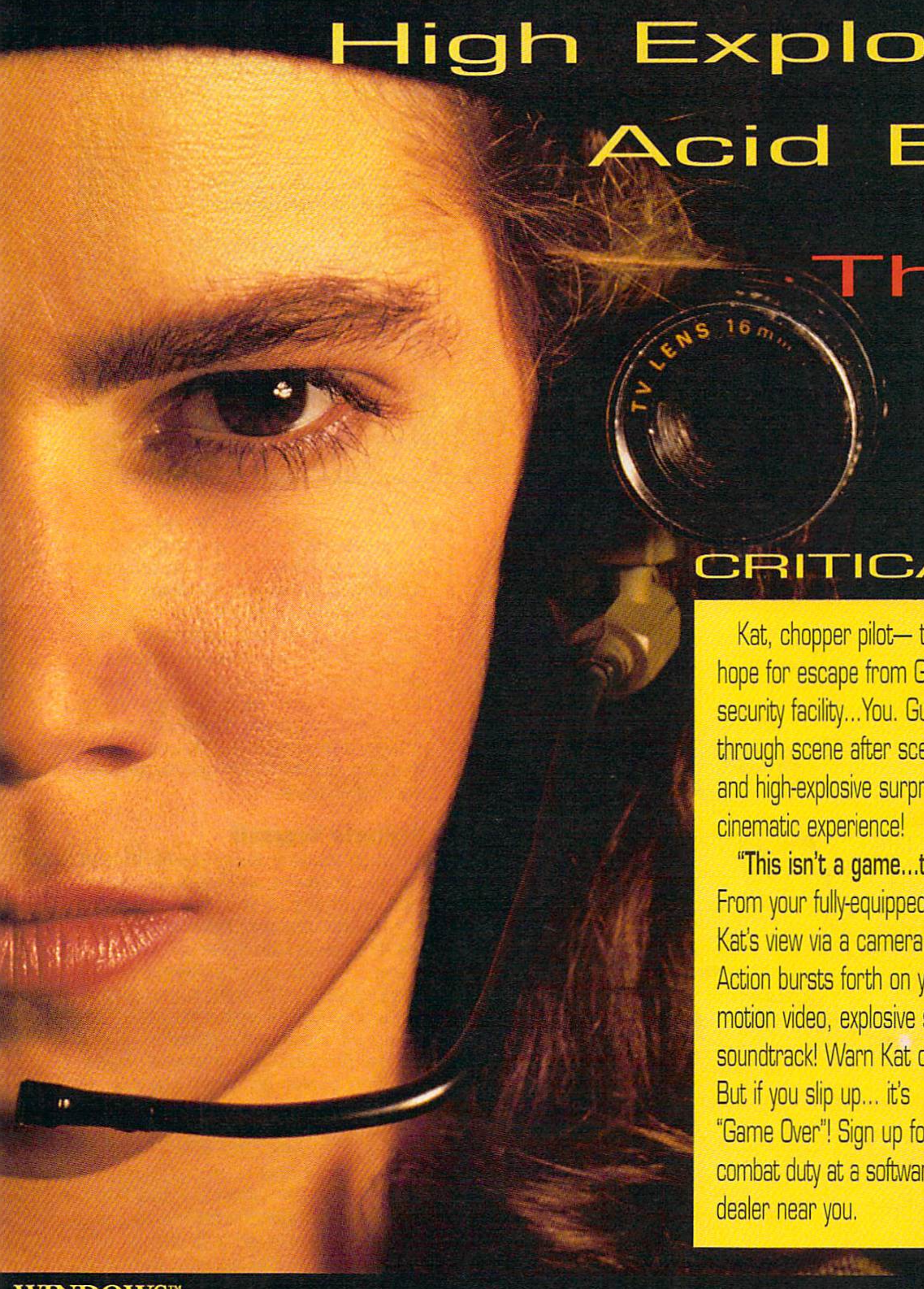
If you prefer getting out on the aerobics floor for exercise, Fitness Partner, developed by Computer Directions, is a CD-ROM that can help you design your own exercise routines.

When you begin, the computer will create your personal profile based on your sex, age, fitness level, and weight loss or muscle-toning goals. Then the computer automatically selects from 75 full-motion video exercises to design your workout, setting the speed and number of repetitions for each exercise. Fitness Partner can design up to nine routines, one for each day of the week and two alternates, for up to ten users.

Fitness Partner also lets you custom-design your own workout. You can choose exercises for the warmup, workout, and cool-down sections; pick the style of background music; and set the speed and number of repetitions for each individual exercise.

Roni Smaldino, a certified aerobics instructor, leads you through each routine, providing audio coaching and words of encouragement. If you don't understand a particular exercise, you can stop the workout and go to the learning mode for a personal demonstration.

Fitness Partner requires a multimedia-compatible computer, including a CD-ROM drive, VGA-plus color capabilities, a digital sound card, and Windows 3.1 or higher. Fitness Partner lists for $69.95. For more information about this CD-ROM product, contact Computer Directions at 2712 West Shaw Avenue, Suite 234, Fresno, California 93711, or call (800) 600-2348.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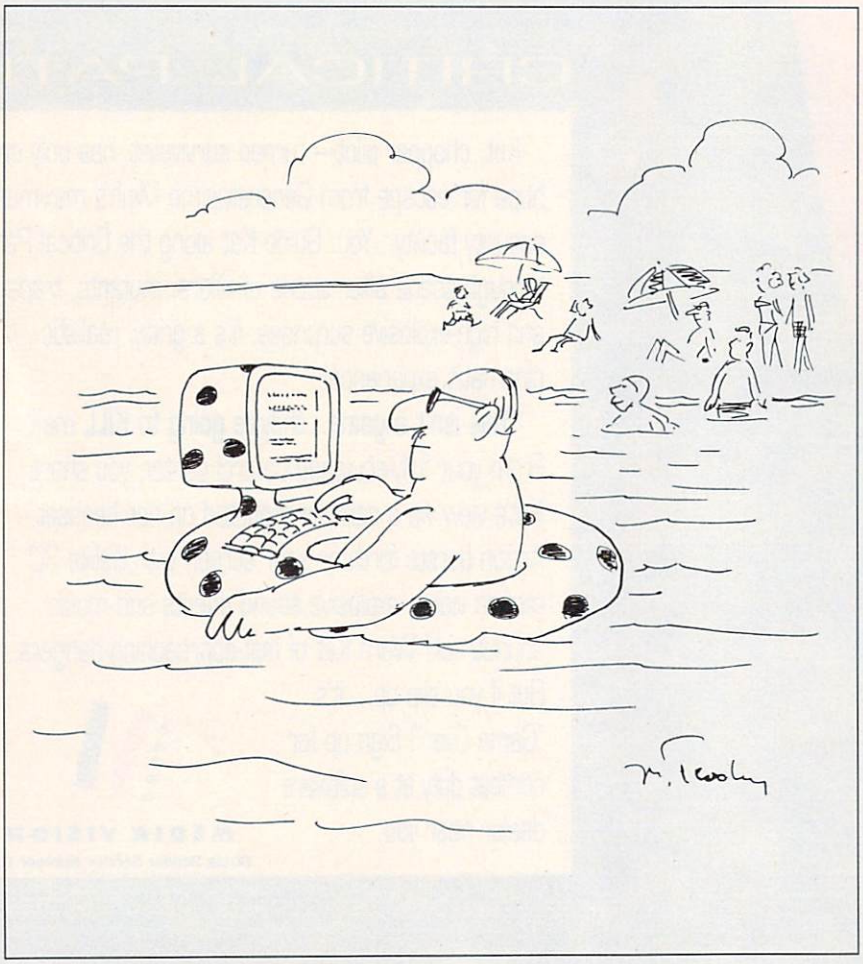

of Diet Simple, tracks 58 items. Both programs also include text explanations and recommendations to help you overcome deficiencies and excesses.

Diet Easy creates menu plans, tracks your progress, and maintains a database of your favorite recipes. It also helps you create weight loss and exercise plans and can generate graphical printouts. N-Squared also makes diet programs Nutritionist III and Nutritionist IV for use by professional dieticians.

Dedicate Yourself

Although tracking every crumb of food that you consume and every movement that you make in your fitness routine may seem tiresome, dedication is the key to success with these software programs. As with any traditional weight loss program, hard work is the primary requirement—but your computer can help make the struggle easier.

"I've probably got umpteen calorie-counting books, but when you can sit down at the computer and enter what you've eaten, it's much simpler," says Jennifer James Chadwick, who is halfway to her goal of losing 20 pounds with the help of Dieter's Edge 2000. "It's so painful with the calorie-counting books, but it's much less painful with the computer. The hardest part is to overcome human nature. You have to make yourself be consistent." ❑

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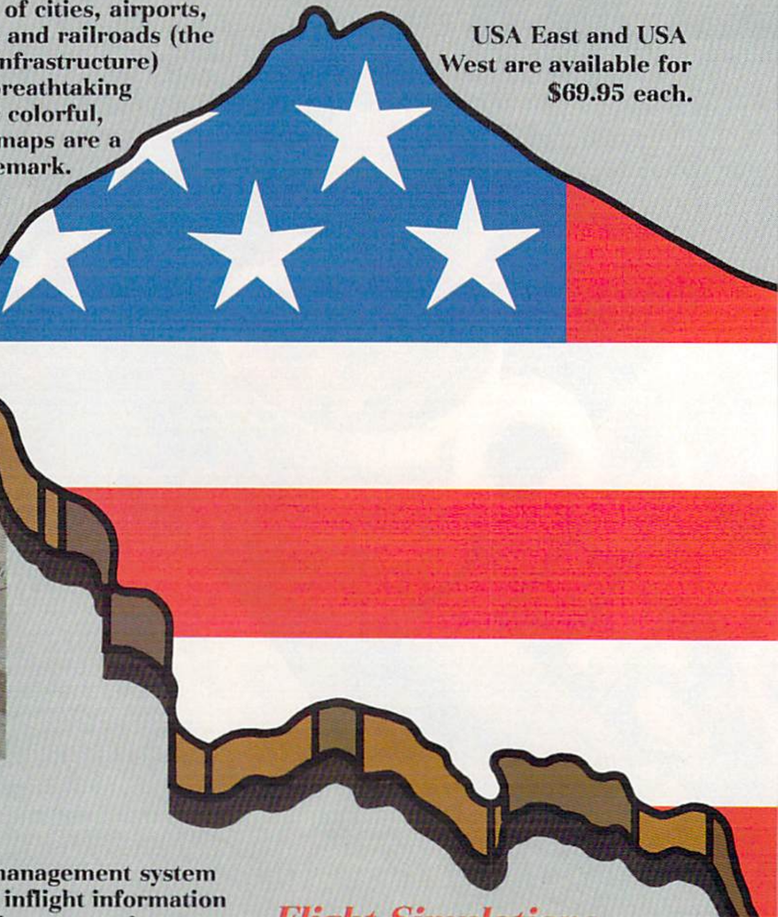

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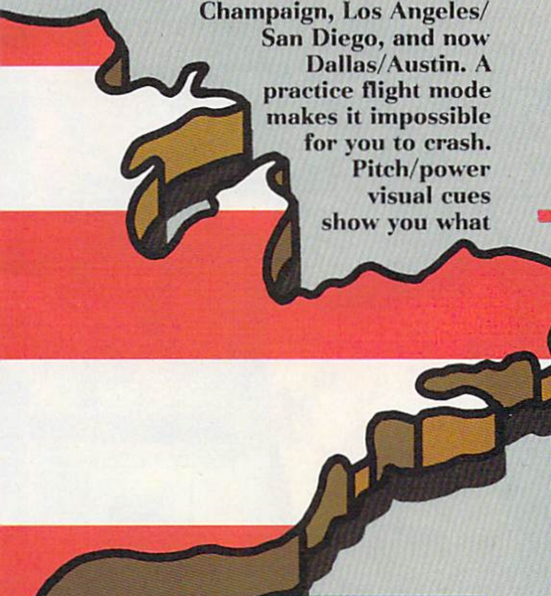

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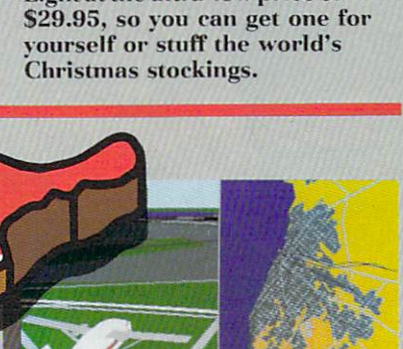
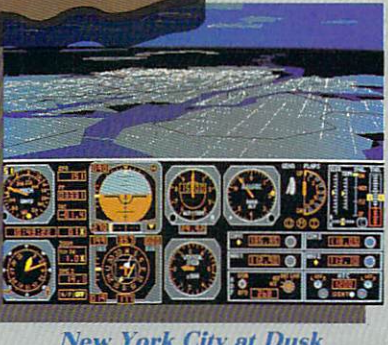


Midway Airport and Map View



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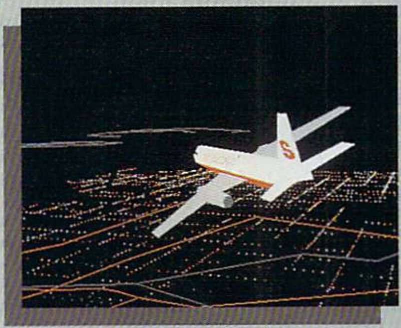

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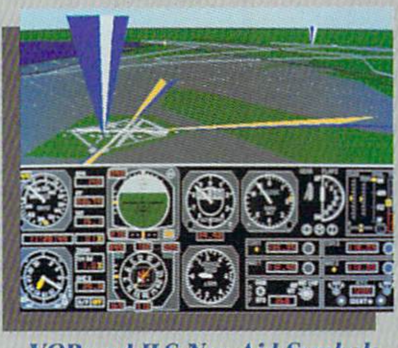

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The Patrician
The Stoerdebeker
Mr. roy in Hamburg

The Patrician

20th ... 1356

My precious A. Scon

Heavy winds and pirate attacks keep me from you longer than planned. Fear not about D'Arblay, I know many things about him he would rather were left unsaid...
The town council shall elect me Mayor, from where I shall rise to Alderman of the whole Hanseatic League!
With this letter is a picture of a ship I bid successfully for. Enough of politics and business!
I count the days until our marriage, I return from Novgorod bearing a gift of beautiful furs that you might wrap them round your slender, smooth young body.

With Passion Patrician

My beloved Patrician 17th, Ernting 1356

Since I saw you last, we hear rumours that you meet in darkened backrooms of alehouses frequented by pirates who sell arms. Are you mad! Do you know not of the Papal Edict forbidding trade in arms!
My father is so upset he threatens to cancel the wedding.
You won't loose just the dowry...
the council will not support a man who breaks the laws of God no matter how much aid you have given the church and the poor.
I am so vexed ~ I must see you soon.
With concern

A. Scon

My beloved Patrician

I write with urgency to tell you t which is stricken with the Plague already your trading must have gain you a ship full of riches, instead speed back to me that we might rekindle the heat of our passion and advance the marriage plans.
Further bad news... recently, a certain D'Arblay has begun business in the town and claims he will be Mayor, not you!
The miserable cur! On your return you would be advised to throw a huge feast for the townsfolk

With Love
A. Scon

The Patrician is an epic saga of power and money set in medieval Europe. Trading and strategy are key to taking your rightful place in the Hanseatic League – the most powerful group of highly organized traders who transformed international trading in the middle ages.

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As the Patrician (an ancient roman aristocrat) you'll travel the high seas visiting sixteen seaport towns, each with different trading potential. Be careful though, your expedition will find you confronting pirates and using the primitive but devastating weapons of the time. Every decision you make has a bearing on what happens later, so you must be a skilled strategist in all aspects of your life, including personal relationships.

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DESKTOP VIDEO FAST FORWARD LURCHES AHEAD

BY DAVID ENGLISH

When Microsoft's Video for Windows was released, many industry pundits predicted a revolution in desktop video. A year later, most computer users aren't even aware of Video for Windows, So what happened?

Too few people are buying Video for Windows or the video input cards that let you bring video clips into your computer. There seem to be two reasons for this. First, as originally released, the program pretty much restricted you to a stamp-sized video image (160 pixels x 120 pixels). It's hard to get excited about video images so small you can barely see them. Second, the actual video files take up a huge amount of space on your hard drive. Even compressed, a 30-second video clip takes up about 4MB—and that's at the 160 x 120 size and a slightly jerky 15 frames per second. So is it time to declare the revolution over, even before it begins?

MULTI
PC
MEDIA

Some revolutions take time and occur quietly, almost without notice. The main effect of this quiet revolution has been on CD-ROM titles. If you have a CD-ROM drive and regularly try out new titles, you probably have the drivers for Video for Windows and QuickTime for Windows without even knowing it. Many of the CD-ROM titles released in 1993 (and an even larger percentage of those scheduled for 1994) are using video clips. When you install one of these CD-ROMs, you receive the playback drivers for the video clips, but you don't get the video capture utilities. The video input cards include the video capture utilities, so there's no longer any reason to buy the Video for Windows package.

The PC industry is making real progress in overcoming desktop video's too-small image size and too-large storage requirements. You can buy several video input cards (Creative Labs' VideoSpigot, Media Vision's Pro MovieSpectrum, and Intel's Smart Video Recorder) that let you work with 320- x 240-pixel video clips. Cards that offer the Holy Grail of full-screen video (640 x 480) are still expensive but are quickly falling in price. Sigma Designs' $449 ReelMagic card, which should be available by the time you read this, will boast full-screen playback with MPEG compression—but has no provision for recording video.

What else is needed to bring you and me into this new world of desktop video? Powerful but easy-to-use video-editing programs. The first two of what will be many such programs are Adobe Premiere (Adobe, 415-961-4400, $295) and MediaMerge (ATI Technologies, 416-882-2600, $295). Both let you combine video clips with a variety of special effects and save the result as a new video file.

Adobe Premiere 1.0 is a subset of the highly respected Adobe Premiere 3.0 for the Macintosh, which offers a larger set of professional features for a hefty $795. The Windows version supports both Video for Windows and QuickTime for Windows files, allowing you to mix the formats and save to either format. The program comes with over 35 image-processing filters, including antialias, emboss, and sharpen edges, as well as 35 effects and transitions, including cross-dissolve, zoom, and venetian blinds,

Even though it doesn't have all the features of the Macintosh version, the Windows version is still a powerful program. The manual shows you how to insert one video image into another (for a picture within a picture), superimpose a person against a background (similar to the Chroma key technique used to place a TV weatherperson in front of a weather map), and even create a 360-degree video presentation (simulating a three-dimensional space with movies playing on each of five walls).

Compared to Adobe Premiere, MediaMerge is easier to use, but that's mainly because it offers fewer features. For example, MediaMerge offers only nine transitions—though you can alter their direction, color, and duration. In its favor, MediaMerge offers a separate WAV file audio editor, an integrated text animator, and a CD-ROM full of videos, animations, sounds, photos, and backgrounds that you can use in your video productions.

With a new generation of cards that offer full-screen video and with powerful editing programs such as Adobe Premiere and MediaMerge, desktop video should finally arrive for the PC—a bit late for the revolution, but just in time for the victory celebration. ❑

MULTIMEDIA PC

HOW TO CHOOSE

By Richard O. Mann

If you haven't already bought a CD-ROM drive for your PC, chances are that you'll buy one soon.

Market researchers estimate that over 6 million CD-ROM drives will be sold in 1993 and a staggering 18 million will be sold in 1994. If you're one of the 18 million who'll be buying in 1994, you've got some homework to do. If you buy a drive to work with your existing sound card, you'll face the whole lineup of drives; if you buy it as part of a multimedia kit, your choices will be more limited. Even if you buy your drive as part of a kit, you'd better know something about the drive that's included—it's too easy to get stuck with less-than-adequate equipment.

The problem is that CD-ROM drives come shrouded in a cloud of technobabble: Average seek time, sustained throughput, SCSI-2, XA specs, multisession capability, and High Sierra compatibility are just some of the terms you'll see. Relying on different measures, at least three major manufacturers claim their drives are the fastest on the market, while others emphasize the particular performance specification that makes their products look the best.

There are no absolutes, and there's no way to pick out the fastest, most reliable, or overall best value. But doing a little homework to understand the terms will help you identify the drives that'll best fit into your system.

Lesson 1: Speed

Double speed. This is the most important measure and the easiest to understand. The original CD-ROM drives spun their platters at the same speed used by audio CD players. By 1992, it was obvious that simply wasn't fast enough, so drive makers upped the rotational speed, resulting in double-speed drives. Double-speed drives can still play audio CDs at the regular speed, but they can literally double the speed at which they grab data and feed it out to the computer.

Increased speed is always pleasant, but it's essential when using Video for Windows, Microsoft's live-action video and sound program used in dozens of the most popular new multimedia CD-ROMs. If you want to enjoy the video footage in the encyclopedias, most of the atlas and travel discs, and hundreds of new discs that will appear in 1994, you need a double-speed drive. Many of the old single-speed drives will stutter when playing a long burst of video.

Unless your CD-ROMs are primarily text oriented and you're a patient sort who doesn't mind several-second delays in information flow, get a double-speed drive.

Data transfer rate. Transfer rates measure the amount of data fed from the drive to the computer bus, measured in kilobytes per second (KBps). Although most manufacturers will quote a burst mode rate (the fastest rate at which a single read's worth of data can be put out), the one that matters is the sustained transfer rate. The sustained transfer rate indicates the speed of a continuous flow of data resulting from many disc reads.

The sustained transfer rate is a function of the disc rotation speed. Single-speed drives run at 150 KBps; double-speed drives achieve at least a 300-KBps rate. Toshiba's latest drive runs at 330 KBps, and Plexstor has hit 335 KBps. In certain applications, such as ones that use Video for Windows, the increase of 30 KBps to 35 KBps can be surprisingly significant.

Average access time. Also called average seek time, this measures the time in milliseconds (ms) it takes the drive to receive a data request, move the head to the data location on the disc, and retrieve the data. It's possible to monkey with this one, because there's no real standard on how far the head has to move.

Access time is only the second-most-important measurement. Real-world use of CD-ROMs often involves sequential reads right down the data tracks, requiring little or no head movement, making the access time extremely fast. Remembering that hard disks offer access times under 20 ms, the fastest CD-ROM drive's 200-ms access time seems rather poky. But compared to the 1000-ms to 400-ms times of drives from two or three years ago, it's quite respectable. If a CD-ROM drive has an access time of 200 ms to 250 ms, it's considered fast.

CPU utilization percentage. It's important that interacting with the CD-ROM drive not monopolize your computer's CPU, which needs to be doing other tasks between the times it talks to the drive. This measure isn't always published by the vendors, but it's still significant. In fact, the Level 2 MPC specifications (explained later) require no more than 50-percent utilization.

If the drive takes too much system time, everything else slows down. Higher transfer rates require more CPU time, so newer, faster drives have to struggle to keep the utilization within bounds. The standard was raised from 40 percent to 50 percent in Level 2 MPC to accommodate the new generation of superquick drives.

Buffer size. A buffer reads data ahead, stores the data on a chip, and feeds it out to the CPU when requested. Without the buffer, all reads would have to come directly from the disc, which is much slower. Buffers range from 64K to 256K. For single-user systems, smaller buffers are perfectly adequate; the larger buffers have noticeable effects only in multiuser networked sessions.

Lesson 2: Data Formats

Originally, CDs were designed to play music. The standards for data on music discs were embodied in the "red book." When computer data came to CD-ROMs, the High Sierra or ISO9660 standard (in the "yellow book") controlled the format. This standard allowed for higher speeds than audio required while still allowing playback of red book audio tracks through a separate channel to the headphones or stereo jacks on the sound card.

Video for Windows required an update to ISO9660, codified in the "orange book." This standard—which wasn't given its own new name—encodes audio information into the normal computer data and ships it out to the computer bus, where Video for Windows separates it. Such interleaved audio data speeds up CD-ROM drive access; the old system had to read the disc twice—once for the sound and once for the data.

The orange book is the current standard. The next step is the XA standard, which involves full interleaving of audio and data, with the audio then going directly to an audio chip for processing. It also provides compression of video data. The bugs aren't fully out of XA yet, but drive makers are building it into their drives as it currently exists. XA requires that the software be written to the standard.

Lesson 3: Photo CD

The new Kodak Photo CD system records photographs in digital form on a CD-ROM. Kodak's Photo CD standard is a takeoff on the XA standard, making it relatively easy for drive makers to add this additional compatibility.

The buzzword here is *multisession capability*. Originally, a Photo CD could only be written to one time, even if the disc ended up being only partially filled. An update to the standard allows appending images to existing photos on a CD. Current drives have the extra intelligence to find second and additional sessions.

Lesson 4: MPC Standards

The Multimedia PC Marketing Council sets the minimum hardware configuration required to successfully run software that's MPC compatible. The original MPC standard, set in 1990, has proven inadequate to support today's more demanding CD-ROM–based software, so the council set the new MPC Level 2 (MPC-2) standard in the summer of 1993.

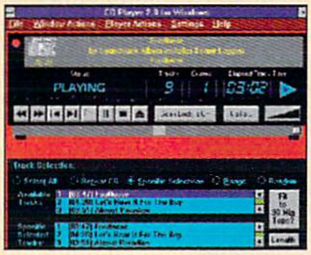
MPC-2 mandates a 486 processor; 4MB of RAM; a 160MB hard disk; a double-

A CD-ROM DRIVE

How to Play Audio CDs on Your CD-ROM Drive

Your computer's CD-ROM drive is a high-priced CD player optimized for the special needs of computer data storage, but it can still play standard audio CDs.

If all you need is a basic CD player program, you can use Windows' own Media Player (MPLAYWE.EXE). It lets you start, stop, and pause your CD, as well as move from track to track. Most multimedia kits and CD-ROM drives also come with utility programs that play audio CDs.



You can augment these basic programs with full-fledged computer CD-player programs that allow you to enter artists' names and track titles. Once you've cataloged a CD, the player remembers it. You can pick from the displayed track titles to create your own individualized program.

CD Player 3.0 (Graphical Bytes, 516-283-4473, $55) puts a familiar CD-player control panel on your Windows desktop with VCR-like control buttons. To record a CD on an audiocassette, use the fit-to-tape feature to compute how best to put the tracks onto various lengths of tape.

SoundWorks (The Software Toolworks, 800-434-3088 or 415-883-3000, $49.95) is a DOS application that runs memory resident in 15K and can be unloaded when not needed. It's old-fashioned and also a tad slow to work with, but it plays CDs and catalogs your collection nicely. It comes with a Works application that serves as a graphical, icon-based menu system for DOS.

speed, XA-ready, multisession-capable CD-ROM drive; a 16-bit sound card; and a 16-bit Super VGA video card capable of 65,000 colors in 640 x 480 mode. The standard doesn't specify local bus, but it would be difficult to meet the required specs without it.

The CD-ROM drive must achieve a sustained transfer rate of at least 300 KBps. MPC-2 machines should be able to play digitized video in a 320 x 240 window at 15 frames per second. The fast CD-ROM drive is a key component in achieving that goal.

We're talking about a powerful computer here, one that'll set you back a fair piece of change. It's smart to buy your CD-ROM drive and sound card to match the MPC-2 specs, even if you're still running a mere 386. It'll pay off in the long run. Certainly not all current CD-ROM software requires that kind of power, but with Video for Windows entering the equation, you're going to be needing that 486.

Lesson 5: Catching the Right Bus

Most CD-ROM drives run off a SCSI (pronounced "scuzzy") bus, usually controlled by a SCSI controller on the sound card. Creative Labs, the manufacturer of Sound Blaster sound cards and associated multimedia upgrade kits, is the most visible holdout. Sound Blaster kits control their CD-ROM drives through an IDE bus. If you plan to control your CD-ROM drive from a Sound Blaster card, you'll have to buy a compatible drive that runs from an IDE controller.

The advantages of the SCSI bus are speed, a widely known standard, and the ability to add as many as seven devices to any SCSI board. You could run a tape drive, a Bernoulli box, a scanner, a hard disk, and another SCSI device without using a slot for a controller card for each device.

Also, look for compliance with the new SCSI-2 standard.

Lesson 6: Physical Matters

You can select either an external or an internal drive strictly on the basis of availability of drive bays and desktop space; there's no performance difference. But remember that even an external drive requires a controller card inside the case.

There are two ways to handle getting a disc into the CD-ROM drive. Most common is a caddy system, involving a removable carrier that holds the CD-ROM as it's inserted into the drive. Less common is a motorized assembly, where a metal tray slides out of the drive's housing to directly accept the CD-ROM .

Because CD-ROM drives are optical devices (they reflect laser beams off tiny spots on the disc's surface), keeping the drive clean is essential. Although the drawer-system drive manufacturers would probably dispute it, using a caddy probably reduces the risk of internal contamination of the laser mechanism. Many drives include a device that physically cleans the laser lens each time you slide a CD-ROM into or out of the drive.

Midterm Exam: Choosing a Drive

You've now done your homework on general considerations for buying a CD-ROM drive. How do you put it together to select a drive? Try this:

1. Determine if you need double speed and low access time. Will you be using current educational and reference CD-ROMs, such as multimedia encyclopedias? If so, you need double speed. If your use will be exclusively for searching text bases and other nonmultimedia tasks, a slower drive will suffice.

2. Determine if you need the new specs, including XA and Photo CD multisession capability. Basically, if you need double speed, you might as well get the rest of it. (It's hard to find a fast drive that doesn't meet

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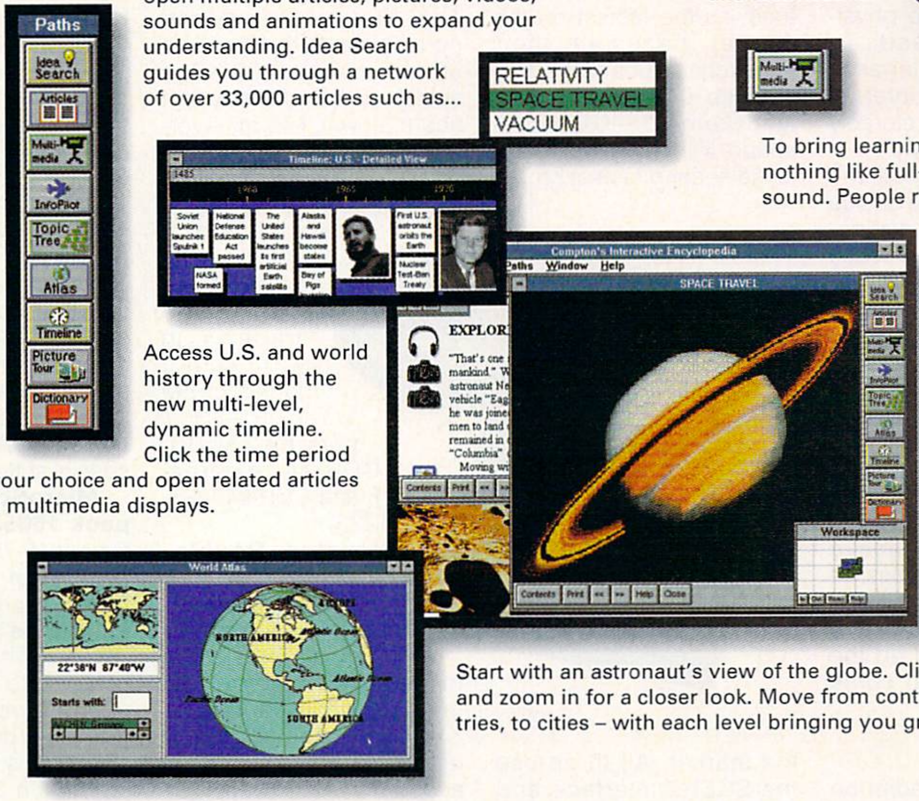
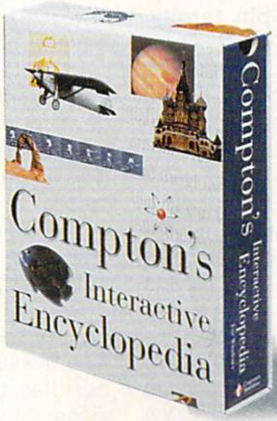

Paths
Idea Search
Articles
Multi-media
InfoPilot
Topic Tree
Atlas
Timeline
Picture Tour
Dictionary
RELATIVITY
SPACE TRAVEL
VACUUM
Multi-media
Timeline: U.S. - Detailed View
Compton's Interactive Encyclopedia
Paths Window Help
SPACE TRAVEL
EXPLOR
Workspace
Contents Print Help Close
World Atlas
22°38'N 67°48'W
Starts with:
NORTH AMERICA
SOUTH AMERICA

To bring learning alive, there's nothing like full-motion video and sound. People remember almost three times more with multi-sensory stimulation over reading alone! *Compton's* features over 200 multimedia clips including videos, animations, sounds, and exclusive slide shows – plus over 7,000 images.

Access U.S. and world history through the new multi-level, dynamic timeline. Click the time period of your choice and open related articles and multimedia displays.

Start with an astronaut's view of the globe. Click on any region and zoom in for a closer look. Move from continents to countries, to cities – with each level bringing you greater detail.

It's a big universe. And with *Compton's Interactive Encyclopedia*™, you can explore it daily. With the click of a mouse you can experience a space shuttle launch – in full-motion video and sound. Click again, and you'll discover the history, technology and people who made it possible. The same easy access can take you from science to nature, history, people and places. *Compton's Interactive Encyclopedia*™, chosen easiest-to-use, offers a world of knowledge through videos, animations, narrated slide presentations, audio and quickly referenced text. Still, the most compelling reason for choosing *Compton's* is this: Your children. You're giving them a tool that can increase their comprehension, stimulate curiosity and enhance motivation. Yes, and *Compton's* is fun, too. And that's what learning should be! Visit your local retailer or call 800-862-2206 for more information.


Compton's Interactive Encyclopedia

Circle Reader Service Number 240

W 100 WINDOWS MAGAZINE

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COMPUTE CHOICE AWARDS

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these specs.)

3. Determine which bus to use. This one's easy: Use the SCSI-2 bus unless you have or plan to buy a Sound Blaster sound card.

4. Determine the physical setup you need. To keep the drive's innards clean, choose an internal drive if possible—preferably one that uses a caddy.

Now that you know the specs you need, the choice boils down to fine distinctions between drives—such as exact speed figures—and price. You also need to determine if you want to buy the drive as part of a multimedia upgrade kit. If you don't have a sound card yet, give serious consideration to the upgrade kits, which give you a CD-ROM drive, a sound card, and usually an attractive bundle of CD-ROM titles. (If you're opting for a kit, it's not unreasonable to make your choice based on the CD-ROM titles that come with the kit.)

The Drives

In spite of the prediction that we'll be buying 18 million CD-ROM drives in 1994, there aren't many vendors manufacturing drives. As you read the ads, look at the multimedia kits and multimedia-ready computers. You'll see the same basic dozen or so drive manufacturers. Here's a summary of the product lines of several of the major CD-ROM drive manufacturers.

Toshiba XM-3401 series. Available as internal drives (XM-3401B, $695), external drives (TXM-3401E, $895), or portable drives operating with supplied parallel port adapters (TXM-3401P, $925), these fine double-speed drives show up in many kits and multimedia systems. Toshiba (714-583-3000) touts them as the fastest on the market, based on their unmatched 200ms average access time. They also achieve a 330-KBps sustained transfer rate, which is the second fastest on the market. All three use the SCSI-2 interface and are XA ready and Photo CD multisession capable.

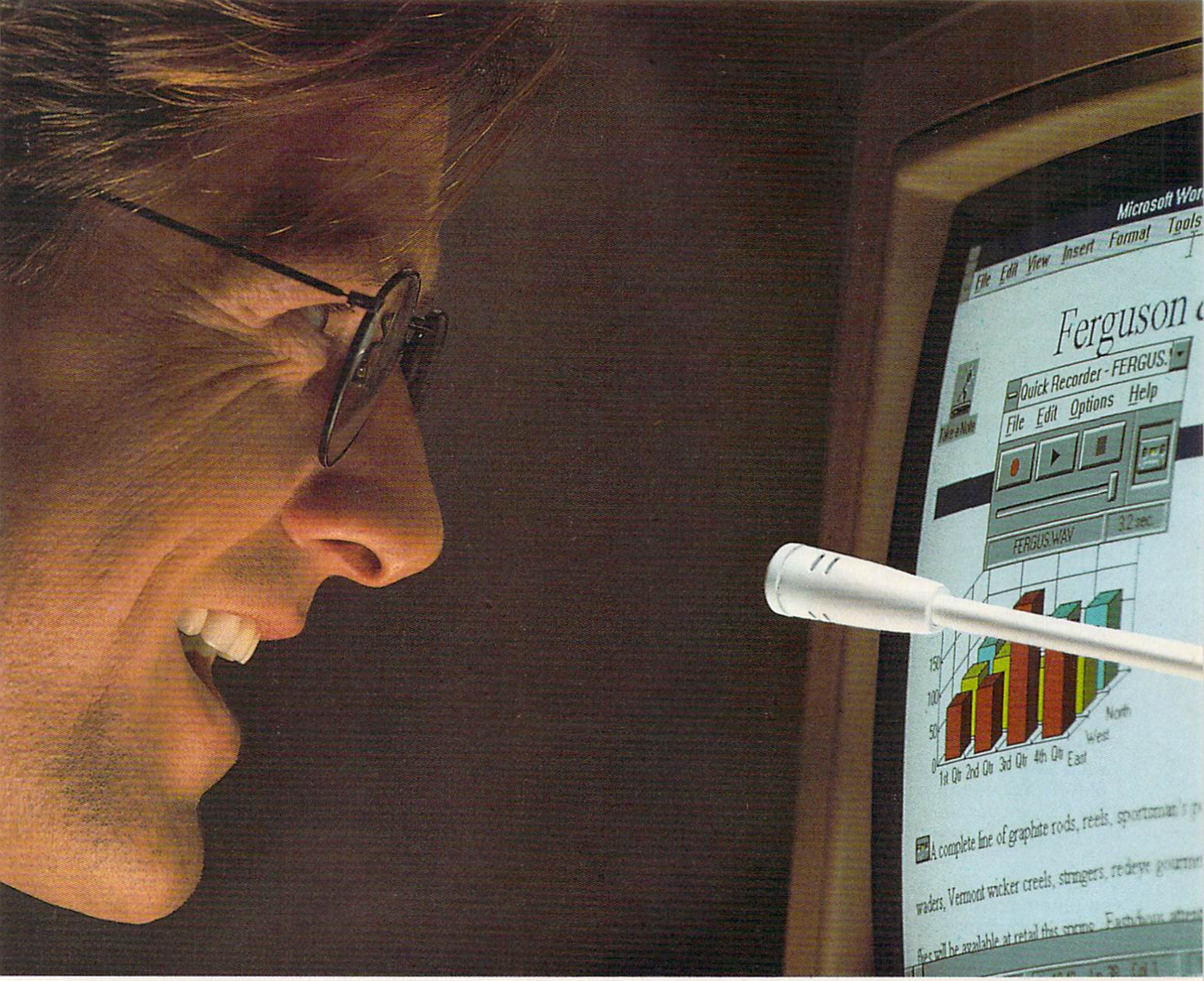
NEC MultiSpin family. NEC (800-NEC-INFO or 708-860-9500) introduced the very first double-speed drive, calling the technology MultiSpin. Both the internal drive (MultiSpin 84, $630) and the external drive (MultiSpin 74, $695) require a disc caddy and utilize a double-door system on the drive to ensure dust protection. Both deliver a 300-KBps sustained transfer rate with a 280-ms average access time. They're XA ready and Photo CD multisession capable, and they offer a switchable setting to either a SCSI-1 or a SCSI-2 bus. The MultiSpin 38 ($560) is a parallel-port portable drive, which loads the disc through a top door. The first double-speed portable drive, the MultiSpin 38 maintains a 300-KBps sustained transfer rate but has a slower 400-ms average access time. It can operate with an optional battery pack. NEC offers an upgrade plan for owners of its earlier models who trade in working models of the CDR-37 portable ($179), CDR-74 external ($249), and CDR-84 internal ($229).

Plexstor Double-Speed Plus drives. Plexstor (408-980-1838), formerly called Texel, also claims its drives are the fastest on the market, based on its 335-KBps sustained transfer rate with a 240-ms average access time. Both the internal DM-3028 ($499) and the external DM-5028 ($599) use a caddy system and have drive doors for dust protection. (The doors make using the drives a little difficult until you learn how to gently pull the door down with the lip of the caddy, once again making disc loading a one-handed task.) The drives are SCSI-2 compliant, XA ready, and Photo CD multisession capable. Plexstor drives are also available in a variety of bundles that include software, Media Vision's Pro AudioSpectrum sound cards, and speakers.

Philips LMS drives. Philips LMS (719-593-7900), formerly Laser Magnetic Storage International, is the only major CD-ROM drive manufacturer based in the United States. Its CM206 internal drive ($499) is a double-speed drive that delivers a 300-KBps sustained transfer rate and a 350-ms average access time. The CM206 uses the 16-bit PC/AT bus directly rather than a SCSI adapter, which LMS says is faster. The drive uses a motorized tray that comes out of the drive to accept a disc, rather than a caddy. An unusual feature allows playing audio CDs with a simple button push—without any special software.

MicroSolutions Backpack 160550. MicroSolutions (815-756-3411) makes a series of Backpack portable peripherals, including a portable CD-ROM drive ($499). The drive plugs directly into the parallel port of any computer. It's a single-speed drive, delivering a 150-KBps sustained transfer rate and a 350-ms average access time. It's XA and Photo CD multisession compatible and uses a top-loading, no-caddy system. Because of its slower speed, it's not appropriate for the more demanding multimedia applications, such as those using Video for Windows. If your road work, however, requires access to textual information and simple graphics, this could be a good choice.

Editor's note: Just as we were going to press, NEC announced its new MultiSpin 3X and MultiSpin 4X readers. The 3X readers are triple-speed CD-ROM dri-


Microsoft Wor
File Edit View Insert Format Tools
Ferguson
Take a Note
Quick Recorder - FERGUS.
File Edit Options Help
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A complete line of graphite rods, reels, sportsman's
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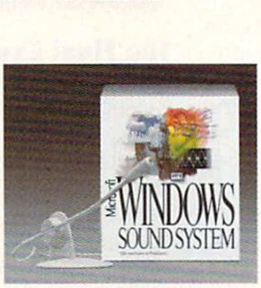
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SOUND SYSTEM

With the new Microsoft® Windows™ Sound System, just tell your computer what you want it to do. You can customize your system to respond to your personal spoken commands. Even our new directional microphone knows exactly who you are.

This full set of audio software has lots of options, too. Spice up presentations with music or quotes. Or proofread numbers as the computer reads them back.

All for the price of a game.

You can also get this software with the sound board included. So go visit your nearest reseller to see what's creating all the conversation.

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How to Cache Your CD-ROM Drive

To see the value of a disk cache, try starting up Windows with your cache disabled. On my fast 486 DX2/66, it takes just over two minutes to load Windows without a cache. With SMARTDRV, the relatively poky Microsoft cache utility supplied with Windows and DOS, the same task takes only 37 seconds.

The slowest drive on your system is the CD-ROM drive; caching it should accelerate it to warp speed. Unfortunately, SMARTDRV doesn't cache CD-ROM drives; you need a third-party program for that. I looked briefly at three of them.

Super PC-Kwik (included in WinMaster 1.5 from PC-Kwik, 800-274-5945 or 503-644-5644, $129.95) is the slowest because it's the most conservative with your data. It doesn't default to delayed disk writes and request sorting, as the others do. It's also difficult to install, requiring you to somehow get its driver loaded physically within 64K of the CD-ROM driver. On one system, I couldn't get it to work at all; on another, it took a half-dozen tries before I got it loaded properly.

Lightning CD (Lucid, 800-925-8243 or 214-994-8100, $79.95) is faster but also suffers from a difficult installation. The manual says in one place that the program will disable SMARTDRV, but it doesn't. Its driver must install after the CD-ROM device driver, but the installation program doesn't necessarily put it there. It took three tries to get this one running, but when it runs, it earns its name. Lightning CD comes with keyboard and video speed enhancers and a directory tree deletion tool.

Norton Speedrive 4.0 (Symantec, 800-441-7234 or 408-252-3570, $99) is similarly fast. Its installation was the simplest, but it also required a manual tweak to the AUTOEXEC.BAT file that wasn't obvious until my hard drive started locking up occasionally. It adds a couple of handy Windows applets to monitor and test cache performance. Because of its safer installation routine, I would recommend Norton Speedrive for those who dislike having to fuss with the system files.

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ves (internal, $500; external, $600; portable, $455), while the 4X reader is a quadruple-speed CD-ROM drive (external, $995).

Multimedia Upgrade Kits

At press time, only Media Vision and Creative Labs were offering Level 2 MPC upgrade kits.

Media Vision kits. Media Vision (800-348-7116 or 510-770-8600) is the manufacturer of the market-leading Pro AudioSpectrum 16 sound card and related products.

The Pro 16 Multimedia System II ($1,199) is the high-end kit, featuring a double-speed NEC 84JD-1 drive with a 300-KBps sustained transfer rate and a quick 250-ms average access time. It includes the Pro AudioSpectrum 16 sound card and the following titles: Compton's Interactive Encyclopedia for Windows, Battle Chess Enhanced, Mantis, Civilization, Macromedia Action!, Mayo Clinic Family Health Book, PC Karaoke, and Where in the World Is Carmen Sandiego? Deluxe.

The Fusion Double CD-16 (external, $799; internal, $699) features the double-speed NEC 55J drive with a 300-KBps sustained transfer rate and a 350-ms average seek time. It's fully MPC-2 compatible. The kit includes a Pro AudioSpectrum 16 sound card and four CD-ROM titles: Compton's Interactive Encyclopedia for Windows, Battle Chess, Arthur's Teacher Trouble, and The 7th Guest.

Creative Labs kits. Of course, Creative Labs makes the famous Sound Blaster series of sound boards. It also sells a series of multimedia upgrade kits featuring Sound Blaster sound card products. Note that the CD-ROM drives in these kits are not SCSI-bus compatible.

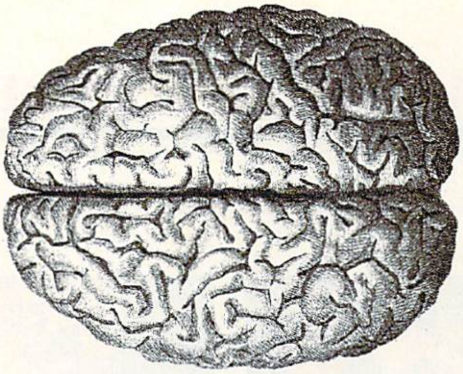
The Sound Blaster DigitalEdge CD kit ($999) features a double-speed, MPC-2–compatible drive with a 300-KBps sustained transfer rate and a 350-ms average access time. The drive uses a front-loading tray. The sound card is the new Sound Blaster Pro 16 with Advanced Signal Processing, a real powerhouse. The bundled software titles include VoiceAssist (voice recognition software), Aldus PhotoStyler SE Photo CD software, The Software Toolworks Multimedia Encyclopedia, Microsoft Works for Windows, Microsoft Bookshelf, Macromedia Action!, and AuthorWare Star.

The Sound Blaster Edutainment CD 16 kit ($750) is built around a double-speed, MPC-2–compatible drive with a 300-KBps sustained transfer rate and a 320-ms average access time. The sound card is the Sound Blaster 16. Creative Labs went all out in bundling software for this kit. The package includes Aldus PhotoStyler SE, The Software Toolworks Multimedia Encyclopedia, Sherlock Holmes Consulting Detective, Lemmings, Secret Weapons of the Luftwaffe, Loom, The Secret of Monkey Island, and Indianapolis 500, the Simulation.

The Final Exam: Parting Words

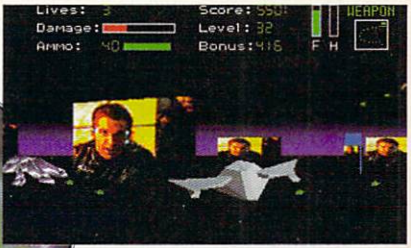
Buying a CD-ROM drive to bring your computer into the era of faster multimedia applications isn't as difficult as it seems. A little education cuts through the smoke screen of letters, numbers, speeds, and compatibilities. With a little research, you'll be ready to choose one of those 18 million CD-ROM drives waiting to be bought in 1994. ❑

THIS IS YOUR BRAIN.



THIS IS YOUR BRAIN NEUROJACKED INTO CYBERNET IN SPECTRE VR.™

FULL MOTION VIDEO FROM CD-ROM: THINK OF IT AS AN INTERMEDIATE STEP BETWEEN CYBERSPACE AND LIFE AS YOU'VE KNOWN IT.

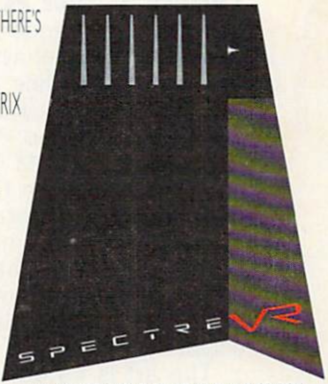


SMART WALLS ARE COVERED WITH LIVE ACTION VIDEO. ACID POOLS WILL TRY TO TRAP YOU. MAYBE YOUR SCATTER SHOTS CAN HELP UNTRAP YOU.

ANY QUESTIONS?

GO AHEAD, JACK INTO A WHOLE OTHER WORLD. THAT IS, IF YOU THINK YOU'RE READY TO HANDLE NANOSECOND PRESSURE FROM SMART-WEAPON ENEMIES THAT LEARN YOUR EVERY MOVE THEN STRIKE FROM ANY DIRECTION. THE CYBERWORLD HAS NEVER BEEN SO FRIGHTENINGLY REAL. BUT THERE'S HOPE: AT LEAST YOU'LL HAVE AN ARSENAL THAT'S JUST AS SMART AND POWERFUL AS THAT OF YOUR OPPONENTS. THE QUESTION: CAN YOU NAVIGATE THE MATRIX AS QUICKLY AS YOUR BRAIN PROCESSES THE STIMULATION ON YOUR SCREEN? THE ANSWER: FIND OUT AS YOU HOVER ABOVE THE CYBERARENA, OR SUBMERGE INTO NEGATIVE CYBERSPACE. YOU CAN EVEN ALTER THE LANDSCAPE, YOUR OPPONENTS AND YOUR WEAPONS WITH VRCHITECT.™ SO, JACK INTO SPECTRE VR WITH ONE PLAYER, A NETWORK OF UP TO EIGHT, OR EVEN MODEM PLAY ON THE PC. AND GET READY FOR A WHITE HOT ELECTRONIC ADRENALINE RUSH. BUT BE FOREWARNED; REALITY WILL NEVER BE QUITE THE SAME AGAIN.

VELOCITY™



AVAILABLE FOR YOUR IBM PC, MAC AND CD-ROM.

HEY, YOU WITH THE CPU: GET A CYBERLIFE. GET SPECTRE VR™.

Circle Reader Service Number 180

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NEW MULTIMEDIA PRODUCTS

Edited By Polly Cillpam

Reading Can Be Fun

Digital Theater has announced a series of edutainment CD-ROMs, called The Learning Carnival. The first entry in the series, The Reading Carnival, is designed to get children ages 6–10 actively involved in reading—and keep them entertained while they learn. Children can enjoy a variety of activities while they explore sections on Animals Facts, Superhero Stories, and Fascinating Facts.

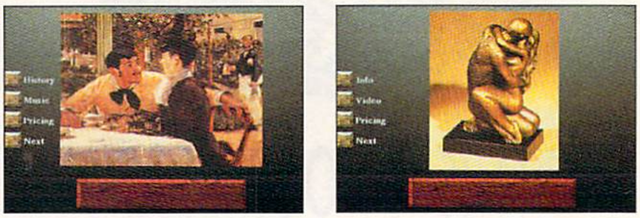
The Reading Carnival features 150 separate screens, six stories, a 630-word pronunciation glossary, eight spelling games and reading quizzes, 18 creative problem-solving games, 60 screens of natural animal photography, and a 20-screen interactive coloring book.

Digital Theater
(404) 446-1332
$49.95

Circle Reader Service Number 530

Culture at Your PC

Here's your chance to sit back and be entertained—and learn about fine art at the same time. Having Cameron's Fine Art Poster Catalog on CD-ROM is like owning a museum full of masterpieces. There are 550 bitmap works of art, 100 WAV-format stereo music files, and over 30 AVI-format video files of sculptures.



Get cultured with Cameron's Fine Art Poster Catalog on CD-ROM.

The art is categorized into several different segments. Pictures at an Exhibition is a tour of 100 replicas of the world's most famous artists, including Old Masters, Impressionists, Post Impressionists, and Contemporary painters. Each one comes with a short history of the painting and painter (including the museum currently displaying the work of art). While viewing the art, you're entertained by a classical music clip, which includes a notation of the musical title and composer.

Sculptures on Video displays historical facts on pieces ranging from the T'ang Dynasty to Rodin; it plays a video clip of the sculpture rotating with accompanying music.

Cameron Enterprises
(800) 765-1-ART
$49

Circle Reader Service Number 531

Little Critters on CD-ROM

Explore the world of baby animals with Kid's Zoo, an adventure for prereaders and early readers on either disk or CD-ROM. Children as young as 3 can learn about the animal kingdom and its young. The program includes an interactive encyclopedia that lets children explore mammals, birds, fish, reptiles, amphibians, and invertebrates through a variety of avenues—animal type, size, lifespan, speed, and even footprints. They can also learn through a series of games that assess their understanding of animal names, appearances, habitats, and sounds. Some of the activities involve matching an animal to the sound it makes or matching an animal to its geographical habitat.

Using the program's paw pointer, children can learn about baby animals through eight activities, including a talking storybook, Baby Animal Movie Theater, and five multilevel games that encourage children to learn and explore as they're challenged by the various levels of the different activities. Upon completion of each game, children are rewarded with congratulations, applause, and a computer-rendered movie created with the program's interactive movie technology.

Knowledge Adventure
(818) 542-4200
$79.95 (CD-ROM version)
$59.95 (disk version)

Circle Reader Service Number 532

More for Your Money

The Sound Galaxy PRO 16 Multimedia Upgrade Kit is quite a bargain. The kit costs hundreds of dollars less than the separate components, and you get five popular CD-ROM titles. The package includes Aztech Labs' new NX PRO 16 sound card, a Mitsumi AT-bus CD-ROM drive, headphones, and a microphone.

Aztech Labs claims the NX PRO 16 is the most compatible sound card on the market; it supports the Sound Blaster Pro, Microsoft Windows Sound System, Ad Lib, Disney Sound Source, and COVOX Speech Thing.

The bundled CD-ROM titles include Microsoft Works, Macromedia Action! 2.0, Battle Chess CD-ROM Enhanced, Toolworks Encyclopedia, and Toolworks Atlas.

Aztech Labs
(510) 623-8988
$639

Circle Reader Service Number 533

High-Tech Show and Tell

Ask Me Multimedia Center has recently introduced a new multimedia software package, called SUPER Show & Tell. It's Windows based, it allows the user to create interactive multimedia presentations in a free-form environment, it's user-friendly, and it supports all popular graphics, animation, sound, and digital video formats.

Create First Class Multimedia Presentations With Sights, Sounds & Motion!
SUPER SHOW & TELL
Full Powered for Windows 3.1
The better way to tell your story!

Create multimedia presentations

The program's key attraction is its universal appeal. For example, it's

BACKROAD RACERS
POWER MODELER

Around here nice guys don't finish last - they don't even finish. Better know how to drive or Catfish Louie and company will take turns making your Backroad Racer a pile of twisted, burning wreckage. Then taunt you as you watch instant replays of your wipeouts. Video clips give hints and make threats while you try to outrun cops and race on four different tracks. Use 3-D animated instructions to build a model of your car so it's easier to identify the torched remains. Available for IBM on CD-ROM.

The model makes the game better. The game makes the model better.™

`Video clips just like this one make the game extra bad. But in a good way.`

After you build your car you can follow all traffic laws and be a safe & courteous driver.

{Of course, you could also go play an action-packed game of hopscotch with your sister.}

Circle Reader Service Number 135

BACKROAD RACERS™

NEW MULTIMEDIA PRODUCTS

appropriate for business and home office users (including sales and marketing), home PC hobbyists, and teachers.

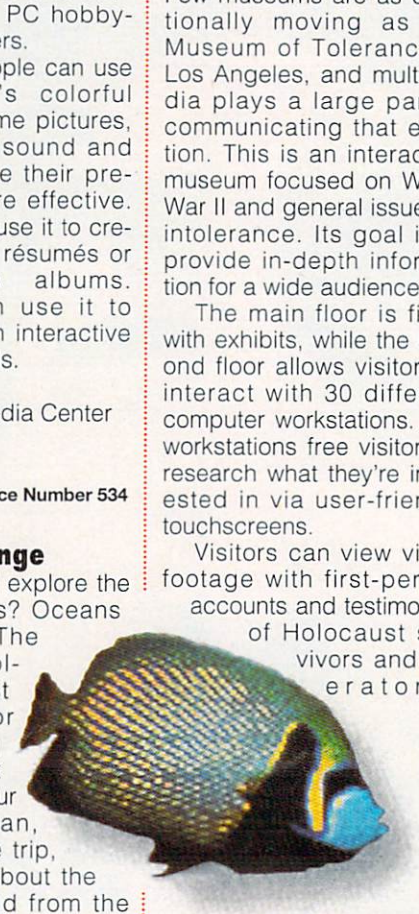
Businesspeople can use the program's colorful charts, still-frame pictures, and text with sound and motion to make their presentations more effective. Hobbyists can use it to create interactive résumés or home photo albums. Teachers can use it to make their own interactive educational tools.

Ask Me Multimedia Center
(612) 531-0603
$149

Circle Reader Service Number 534

Take the Plunge

Wish you could explore the world's oceans? Oceans Below, from The Software Toolworks, has just the journey for you, and you won't even get wet. Choose your favorite ocean, prepare for the trip, and learn all about the undersea world from the floor up.



Select from over 200 topics of information, as well as over 45 minutes of video clips, synchronized sound, photographs, and original music. Learn about local sea life, explore shipwrecks, and feed or ride any of the fish in the habitat you've selected. It's like going to the aquarium without leaving the comfort of your own home.

The Software Toolworks
(415) 883-3000
$49.95

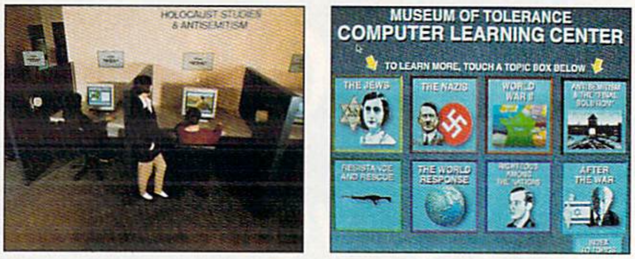
Circle Reader Service Number 535

Using Technology to Humanize History

Few museums are as emotionally moving as the Museum of Tolerance in Los Angeles, and multimedia plays a large part in communicating that emotion. This is an interactive museum focused on World War II and general issues of intolerance. Its goal is to provide in-depth information for a wide audience.

The main floor is filled with exhibits, while the second floor allows visitors to interact with 30 different computer workstations. The workstations free visitors to research what they're interested in via user-friendly touchscreens.

Visitors can view video footage with first-person accounts and testimonies of Holocaust survivors and liberators.

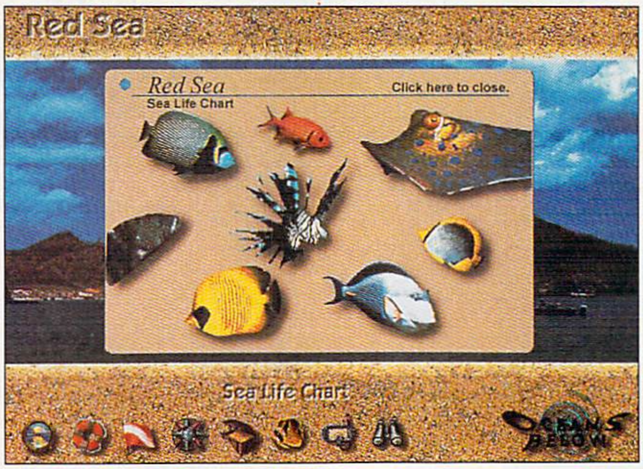

HOLOCAUST STUDIES & ANTISEMITISM
MUSEUM OF TOLERANCE
COMPUTER LEARNING CENTER
TO LEARN MORE, TOUCH A TOPIC BOX BELOW
THE JEWS
THE NAZIS
WORLD WAR II
ANTI-SEMITISM & THE "FINAL SOLUTION"
RESISTANCE AND RESCUE
THE WORLD RESPONSE
RIGHTEOUS AMONG THE NATIONS
AFTER THE WAR

The Museum of Tolerance features 30 multimedia workstations.

Eight main topics include 5000 different subjects. The database contains 39 volumes of Time/Life Books, MacMillan's *Encyclopedia of the Holocaust*, and *Encyclopedia Judaica*, as well as hundreds of specialty articles not available anywhere else in the world. There are also 57,000 archival photographs, documents, and maps. You can work your way down through a learning tree to the topic of your choice, or you can pick a particular element of that topic and swim laterally through the database for a more focused look at a subject of particular interest.

Museum of Tolerance
(310) 553-9036
Admission prices vary according to age and group size. School groups are admitted free.

Circle Reader Service Number 536



Explore undersea life with Ocean's Below.

Multimedia Bonanza

Trying to build your own MPC system? Aris Entertainment may have the solution for you, and it costs only $14.95. The company has begun shipping MPC Wizard 2.0, which gives CD-ROM and Windows 3.1 users the most up-to-date VGA and sound drivers for their multimedia systems.

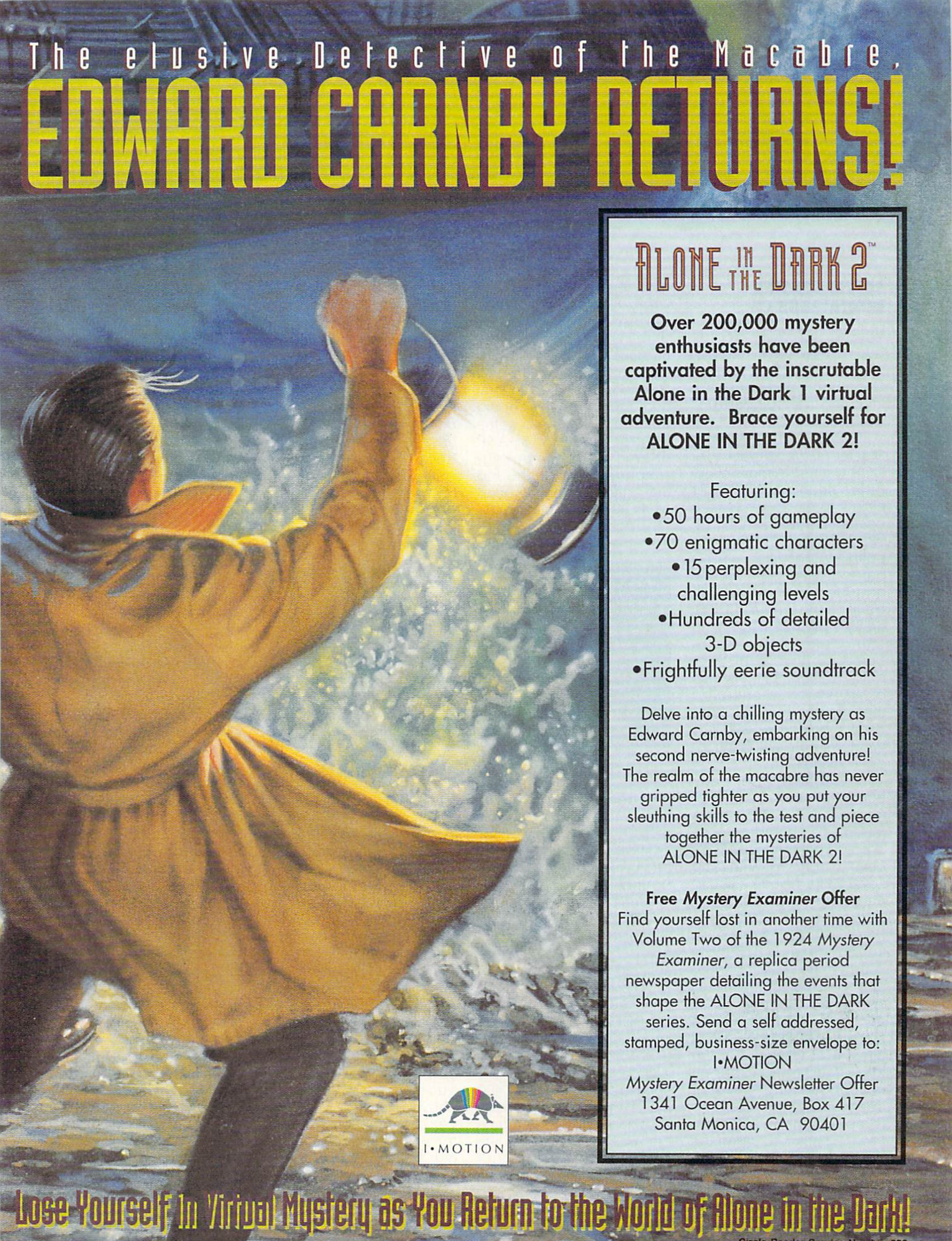
Like its predecessor, MPC Wizard 1.0, MPC Wizard 2.0 contains the largest collection of VGA and sound drivers for Windows 3.1 on a single CD-ROM. This latest version adds nine Microsoft Video for Windows runtime videos, 20MB of additional drivers, 60 color photographic images, and 60 audio tracks.You also get Aris's standard Media-Clips interface to view the pictures, hear the sound tracks, and watch the Video for Windows live-action videos. All the videos, sound clips, and images may be used royalty-free in any presentation, as long as credit is given to Aris.

Aris Entertainment
(310) 821-0234
$14.95

Circle Reader Service Number 537

The elusive Detective of the Macabre,

EDWARD CARNBY RETURNS!



ALONE IN THE DARK 2™

Over 200,000 mystery enthusiasts have been captivated by the inscrutable Alone in the Dark 1 virtual adventure. Brace yourself for ALONE IN THE DARK 2!

Featuring:

- 50 hours of gameplay
- 70 enigmatic characters
- 15 perplexing and challenging levels
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- Frightfully eerie soundtrack

Delve into a chilling mystery as Edward Carnby, embarking on his second nerve-twisting adventure! The realm of the macabre has never gripped tighter as you put your sleuthing skills to the test and piece together the mysteries of ALONE IN THE DARK 2!

Free *Mystery Examiner* Offer

Find yourself lost in another time with Volume Two of the 1924 *Mystery Examiner*, a replica period newspaper detailing the events that shape the ALONE IN THE DARK series. Send a self addressed, stamped, business-size envelope to:

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Mystery Examiner Newsletter Offer
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Santa Monica, CA 90401

I•MOTION

Lose Yourself In Virtual Mystery as You Return to the World of Alone in the Dark!

Circle Reader Service Number 222

MULTIMEDIA SPOTLIGHT

By David English

SOUND BLASTER DIGITALEDGE CD

Why do so many people buy Creative Labs' multimedia upgrade kits? Because Creative Labs virtually invented the standard PC sound card.

Today, the Sound Blaster is *the* standard for DOS games. Almost every other sound card either claims to be Sound Blaster compatible or will soon be offering Sound Blaster compatibility. Technically, only cards from Creative Labs and Media Vision (which bought the compatibility rights in a court settlement) can claim 100-percent compatibility. With Windows, compatibility is less of an issue, as any card that meets the MPC standard should work with any Windows program that supports sound.

If you haven't already bought a multimedia PC or upgraded your PC with a multimedia upgrade kit, you should consider only MPC Level 2 upgrade kits. The Level 2 kits include a sound card with 16-bit sampling and a double-speed CD-ROM drive. The 16-bit sound card will simply improve the quality of your sound, but the double-speed drive is absolutely necessary to handle today's more demanding CD-ROM titles. Just weeks after the MPC Marketing Council introduced the Level 2 specifications, Creative Labs announced its first Level 2 package, called the Sound Blaster DigitalEdge CD.

The DigitalEdge CD package includes Creative Labs' top-of-the-line sound card, the Sound Blaster 16 with Advanced Signal Processing (ASP). The ASP chip functions as a coprocessor and will allow you, in the future, to add QSound and other special audio features. In keeping with the Level 2 specs, the Sound Blaster 16 ASP offers 16-bit sampling, which gives you sound that's theoretically as good as an audio CD (theoretically, because interference from the motherboard and adjacent cards can degrade the sound). Along with the usual CD-ROM, joystick, MIDI, audio-in, and audio-out connectors, the Sound Blaster 16 ASP includes an add-in connector for the Wave Blaster, a General MIDI daughterboard that costs a very reasonable $249.

Creative Lab's Sound Blaster DigitalEdge CD

Also in keeping with the MPC Level 2 specs, the CD-ROM drive is a double-speed drive (300K-per-second throughput) with an access time of 350 ms (the specs require a rate of 400 ms or faster) and is multisession Photo CD compatible. Despite its speed, the CD-ROM drive doesn't require a caddy—you place the CD-ROM directly into the motorized tray, just as you would place an audio CD into a standard CD player. Another nice feature is the embedded cleaning brush, which removes the dust from the drive's lens each time you load a disc into the drive. On the downside, the DigitalEdge CD drive isn't a standard SCSI drive, unlike most other CD-ROM drives. That means your choices will be limited later if you decide to upgrade your CD-ROM drive or switch to a sound card from a company other than Creative Labs.

These days, just about every multimedia upgrade kit comes with a bundle of CD-ROM–based and disk-based applications. The DigitalEdge CD's bundle includes Microsoft Works for Windows, Microsoft Bookshelf, The Software Toolworks Multimedia Encyclopedia, Macromedia Action, Authorware Star, Aldus PhotoStyler SE Photo-CD access and imaging software, a microphone, and speakers. As far as bundles go, this one is above average. Microsoft Works is especially useful for someone just starting out, Bookshelf is a terrific CD-ROM reference, Action and Authorware are powerful multimedia presentation and authoring programs, and few upgrade kits include a microphone and speakers.

The audio utilities in the package are especially strong. The most interesting utility is VoiceAssist, a Windows-based speech recognition program that lets you use voice commands to launch and control just about any Windows application. Unlike the speech recognition program that ships with the Media Vision sound cards, VoiceAssist lets you add your own application-specific commands.

You also get SBTALKER for DOS and Monologue for Windows, two text-to-speech programs; WaveStudio, a Windows-based application that lets you record, play, and edit 8-bit and 16-bit WAV files; Creative Soundo'LE, a Windows-based application that lets you record and play back WAV files in other applications using OLE (Object Linking and Embedding); Windows Mixer, an onscreen mixer that controls the levels of your audio sources; and much more.

Many factors go into choosing the best multimedia upgrade kit. If you're looking for an MPC Level 2 package at an excellent price, take a good look at the Sound Blaster DigitalEdge CD. The ability to upgrade the sound card to General MIDI, the caddyless CD-ROM drive, and the strong audio utilities make it a terrific package.

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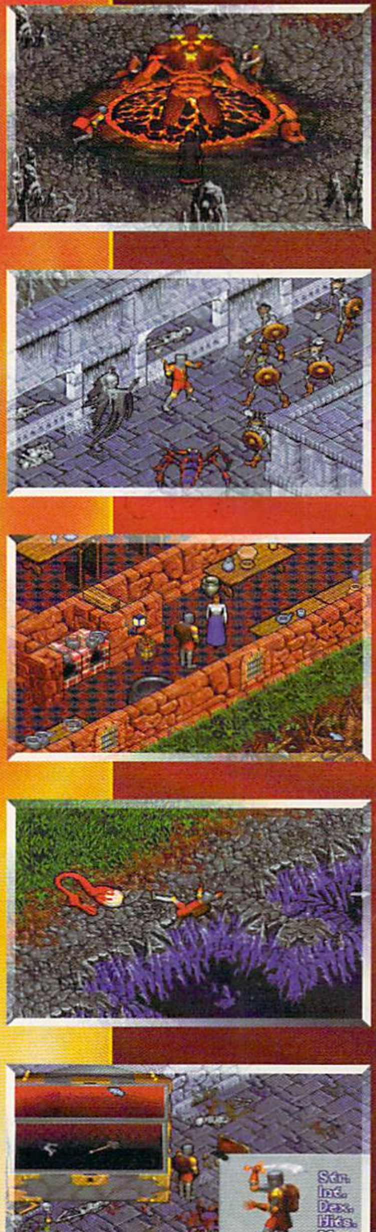

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This flexible spreadsheet package offers a new, more efficient way of organizing information.

Stephen Levy

IMPROV FOR WINDOWS 2.1

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Handbook

You may never have thought it possible, but there's a whole new way of working with spreadsheets. With Improv for Windows, the new superstar from Lotus, gone are the traditional spreadsheet rows, columns, and cells. In their place you'll find items and groups—and a more efficient way of using and looking at data.

Improv offers a tremendous advantage to those who need more than an electronic version of a paper worksheet. Because of the way it organizes data, Improv is perfect for those who need to organize the same information in a variety of ways. It's also appropriate for people who need to make presentations. By using Improv to create different views of the same data and to place charts created from the data as views, users can actually create a sort of slide show with their data.

With Improv, you have to begin thinking in terms of items and groups. An item consists of a name and all the cells associated with that name. Improv uses the term *item* to describe both rows and columns for the location of data. If you're accustomed to the traditional spreadsheet structure, this can be a bit confusing until you realize that an item and all of its related cells are not fixed in any row or column.

You also have to be concerned with the concept of dynamic placement of data. In traditional spreadsheets, the data can be dynamic, but the structure of the worksheet is static. With Improv, the data and the placement are both dynamic; that is, you can easily present the information in different ways without rebuilding the entire worksheet. And you can save each of your views within the same worksheet.

This dynamic views function is a powerful tool and is surprisingly simple to use. Imagine a worksheet that lists income, expenses, and profits for a company by regions. These figures are listed by month for each region, so this worksheet would show you the profit per region per month. With Improv, you can easily and quickly create a second view that groups the regions together by month, allowing you a quick comparison of the regions' income, expenses, and profit. The data for each of the items stays together in each view. No matter how you move the categories around, each item's data always remains together. And charting this same information is as simple as selecting the Create Chart option from the menu. Being able to manipulate the data in a worksheet is very handy should you need to present information one way for the sales and marketing department and another way for the accountants.

Improv's paging feature offers another unique way of organizing data. It allows you to highlight specific data and still have other information at your disposal. In our example above, we could easily move the Income/Expense/Profit category into the paging position. This would mean that only one of the three items (income, expenses, or profits) for each of the regions would be displayed at a time. To see any of the other items, you'd just click on the page arrow. Thus, the paging feature allows you to isolate the data you want to emphasize and still be able to page through other information if necessary. You could likewise isolate the months, paging through the data one month at a time. Improv's paging feature is not just interesting; it's also an invaluable timesaver if you need to make a presentation that requires specific data to be highlighted for one group and other data to be highlighted for another. All the while, you'll still have other data handy if you need it when you explain ideas or when your listeners request further details.

Items can also be given style attributes. And when you change the layout of the worksheet by moving a category, the styles stay with the items, regardless of how the worksheet is organized. A full complement of formatting options is available, so you can change the text color, size, style, shading, and so forth.

To make your work even easier, Lotus has included a feature called Quick Menus. These menus give you easy access to common editing commands and other pertinent commands. You invoke Quick Menus by pressing the right mouse button; a standard pull-down menu appears at the mouse pointer—right where you're currently working. This helpful and convenient feature further illustrates the effort Lotus made to make Improv both innovative and easy to use.

And the package doesn't stop there. It offers another unique feature—dynamic general formulas. Unlike formulas in other spreadsheets, formulas in Improv are easy to understand. They are expressed in words, not in cell address notation. A formula such as Profit=Income–Expenses is much easier to understand (and remember) than +E4–F4. Formulas can apply to a range automatically, so copying them over and over again isn't necessary.

Improv is also self-documenting: The formulas are placed in another pane on the screen in words. When you highlight any cell or item that is the result of a formula, that formula is also highlighted. This allows you to see how the result was derived.

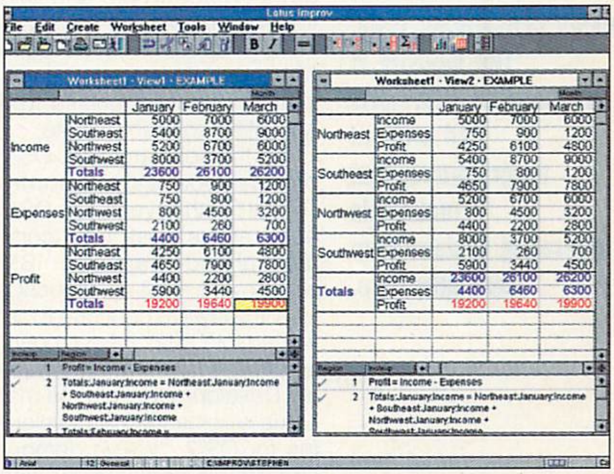
Creating formulas is quick and intuitive. There are a number of ways to begin creating a formula, as Lotus has tried to accommodate the different ways users work with spreadsheets. You can use the menus and choose Create Formula, or if you're a traditionalist, you can press the = or + key to start writing a formula. Improv will supply the beginning of the formula, such as Profit=. Then all you need to do is click on the appropriate items and the Formula Bar.

Improv also includes all the charting tools that spreadsheet users have come to expect. You have 20 different types of charts to pick from: 9 bar charts, 3 line charts, 2 pie charts, 3 area charts, and 3 mixed charts. Among the assortment are both two- and three-dimensional options. Additionally, all of Improv's charts are dynamic, changing as the data in the worksheet changes. It's easy to create a chart, too: You need only select the data you want charted and choose Create Chart, and it's done.

Improv doesn't neglect the powerful, advanced features experienced spreadsheet users will want. For instance, it includes LotusScripts, a tool for building applications based on Improv or extending Improv's functionality.

Of course, an important consideration when you look at any new spreadsheet is how well it imports data from other spreadsheets. Improv imports data easily from other Lotus spreadsheets and from Excel. To import from Quattro Pro for Windows, however, you'll have to save the Quattro Pro file in a format that Improv can understand, such as 1-2-3. You can also import ASCII text files, although the imported text might need some work. Imported spreadsheets help the user of traditional spreadsheets feel right at home by using row and column numbers and letters as item names.

Lotus Improv for Windows 2.1 provides the software market with a unique set of capabilities for building, viewing, and analyzing data. It offers exceptional flexibility for displaying data. Spreadsheet users might find in Improv a new tool that will make their tasks quicker and easier. Those who often have to make data presentations will find Improv meets their needs. Lotus is to be commended for moving spreadsheets a big step forward. Improv's new, easy, and intuitive approach to data is long overdue. ❐


Lotus Improv
File Edit Create Worksheet Tools Window Help
Worksheet1 · View1 · EXAMPLE
Worksheet1 · View2 · EXAMPLE

		January	February	March
Income	Northeast	5000	7000	6000
	Southeast	5400	8700	9000
	Northwest	5200	6700	6000
	Southwest	8000	3700	5200
	Totals	23600	26100	26200
Expenses	Northeast	750	900	1200
	Southeast	750	800	1200
	Northwest	800	4500	3200
	Southwest	2100	260	700
	Totals	4400	6460	6300
Profit	Northeast	4250	6100	4800
	Southeast	4650	7900	7800
	Northwest	4400	2200	2800
	Southwest	5900	3440	4500
	Totals	19200	19640	19900

1 Profit = Income - Expenses
2 Totals:January:Income = Northeast:January:Income + Southeast:January:Income + Northwest:January:Income + Southwest:January:Income
3 Totals:February:Income =

		January	February	March
Northeast	Income	5000	7000	6000
	Expenses	750	900	1200
	Profit	4250	6100	4800
Southeast	Income	5400	8700	9000
	Expenses	750	800	1200
	Profit	4650	7900	7800
Northwest	Income	5200	6700	6000
	Expenses	800	4500	3200
	Profit	4400	2200	2800
Southwest	Income	8000	3700	5200
	Expenses	2100	260	700
	Profit	5900	3440	4500
Totals	Income	23600	26100	26200
	Expenses	4400	6460	6300
	Profit	19200	19640	19900

1 Profit = Income - Expenses
2 Totals:January:Income = Northeast:January:Income + Southeast:January:Income + Northwest:January:Income + Southwest:January:Income

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Bradley M. Small

THE SUPPORT FOR OS/2 2.1

Third-party support and compatibility are major concerns of users considering OS/2. The industry is responding with ports and original programming that make this operating system even more attractive.

Last month, we took a close look at the power of OS/2. This month, we'll look at something equally important: third-party support for OS/2.

As we showed last month, OS/2 is highly compatible with Windows 3.1. The million-dollar question is how long OS/2 will be able to maintain Windows compatibility. IBM and Microsoft had a contract that involved each company's having access to the other's source code. This contract expired in September 1993. IBM will continue to be able to use the technology of 16-bit Windows (Windows 3.0 and 3.1) forever but will not have access to 32-bit Windows code (Windows NT) or any future version of Windows unless IBM and Microsoft renegotiate.

On the software side, OS/2 provides potential for growth. To start with, over 1700 OS/2 applications exist, both commercial and shareware. IBM will provide a list on request.

Will software continue to be written for OS/2? Peter Cohen, spreadsheet PR manager of Lotus Development, told me that Lotus is committed to developing for OS/2. "We've demonstrated this commitment with the [OS/2] products that we've delivered over the last few months." Lotus has released 32-bit OS/2 versions of cc:Mail, Lotus 1-2-3 2.0, Freelance Graphics, and Lotus Notes. And by the time this column goes to press, Lotus will have released Ami Pro for OS/2, making it the first company to have a full suite of OS/2 desktop applications.

WordPerfect has released and is shipping WordPerfect 5.2 for OS/2. It supports all of the features of the current DOS and Windows versions, and it comes with a 32-bit version of Grammatik for OS/2.

In the OS/2 version, WordPerfect adds the document summary to the file's detail view. There are other important features like drag-and-drop printing and document registration that give it advantages over other versions of the product.

WordPerfect for OS/2 is a Mirrors port of the Windows version. Mirrors is a library used for porting existing Windows apps to 16-bit OS/2. Since the port is 16-bit rather than 32-bit, there is a performance hit. However, this product is intended as an interim solution until the full 32-bit 6.0 version is developed sometime in 1994.

Another important OS/2 developer is DeScribe, maker of the OS/2 word processor of the same name. DeScribe is a 32-bit product boasting many of the same features as the high-end DOS and Windows word processors and a few special features all its own. DeScribe has been available for OS/2 since version 1.1.

Hilgraeve has the top-selling communications product for OS/2, HyperAccess 5 3.1. It boasts network support (giving you the ability to use shared modems over a LAN), all of the popular download protocols, scripting with script learning, and many other features. Using host mode, you can control the host computer and even run DOS and OS/2 text-mode applications over the telephone lines from a remote computer.

Stac Electronics, the creator of Stacker, has released version 3.1 for OS/2 FAT systems. It provides on-the-fly file compression. It comes with both OS/2 and DOS drivers. Currently, OS/2 can't read PC-DOS or DOS 6 compressed volumes. Stac Electronics offers a special package for owners of DOS 6 that includes a conversion utility to convert DoubleSpace volumes to Stacker volumes which are readable under both DOS and OS/2.

Soft Touch Systems makes a set of file- and disk-related tools called the GamaTech Tools. This is an essential package for OS/2. It handles both HPFS (the optional High Performance File System for OS/2) and FAT (the standard DOS file system). These utilities optimize, repair, and provide general maintenance for files and disks. They also provide file locking, system protection against boot-sector modification, and more.

Of course, Borland International has released an excellent OS/2 2.0 C/C++ compiler (a COMPUTE Choice Award finalist). Borland is currently working on an upgrade for the added functionality of OS/2 2.1. With the popularity of Borland development tools, more applications should soon appear as a result of Borland's interest in the operating system.

An indispensable book on getting the most out of OS/2 is *OS/2 2.1 Unleashed* by David Moskowitz, David Kerr, and others (published by Sams, 11711 North College, Carmel, Indiana 46032).

The major drawbacks of OS/2 are the question of future Windows compatibility and the hardware demands. With Windows-to-OS/2 ports becoming commonplace, perhaps compatibility isn't so much of an issue anymore.

On the hardware front, OS/2 requires at least a 386 and 4MB of RAM as well as 15MB to 40MB of disk space for installation. This is the minimum that will provide you with all of OS/2's capabilities. As you add more memory, you'll see more speed and efficiency. When you consider the requirements for Windows NT, OS/2's requirements are modest by comparison. ☐

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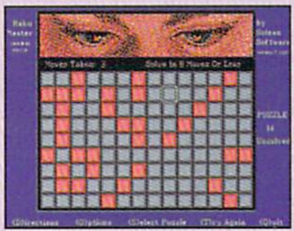
Luck won't help you with Raku Master.

Give your logic skills a fun workout in MiceMen.

Raku Master
Raku Master is a pure logic game that will challenge all serious puzzle lovers. The object of the game is to flip all the red tiles back to gray in as few moves as possible. You can flip up, down, or diagonally, starting with any tile. The Raku Master will tell you the exact number of moves in which he can solve the puzzle. If you don't believe it can be done, let him show you the solutions for the first 10 of the 50 puzzles.

MiceMen
MiceMen is another exciting, fun-filled, animated strategy game. Push and pull columns of cheese blocks to get your mice to the other end of the maze before the computer opponent beats you to the punch.

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ART WORKS

Robert Bixby

IN CAPTIVITY

There are a number of options for capturing a screen either in Windows or in DOS. The quickest and easiest way to save a Windows screen is to press PrintScreen in Windows. That saves the entire Windows screen to the Clipboard. You can then save it as a CLP file or paste it into Windows Paintbrush (the technique for this is covered in "Built-in Windows Power Tools" in the November 1993 COMPUTE), edit it, and then save it as a BMP or a PCX file. You can save only the active window by pressing Alt-PrintScreen.

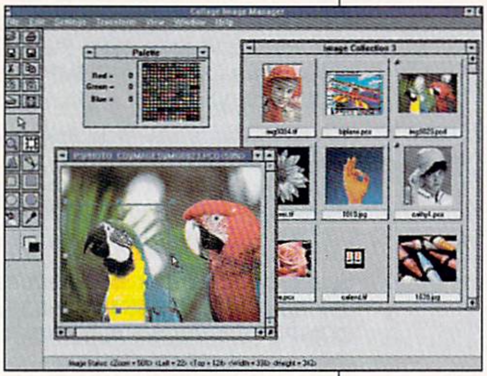

Image cataloging adds another level of convenience to Collage Complete.

Clif Karnes has written a program called Clip-In (which he may soon release as shareware) that will capture to the Clipboard individual elements of the Windows screen, such as a scroll bar, a dialog box, an icon bar, or an area you define yourself.

With so many alternatives available, commercial publishers have to go a long way to earn your dollar.

Collage Complete (Inner Media, 60 Plain Road, Hollis, New Hampshire 03049; 603-465-3216; $199) is the successor to the fast and flexible Collage Plus. My only complaint about Collage Plus: It was difficult to get a look at the pictures captured. Collage Complete eliminates that problem by providing not only a viewer and editor but also an image catalog that displays thumbnails of images. You can also capture from DOS, edit pictures, and convert images individually or as a batch. Collage Complete comes with a two-disk sample clip art collection.

Collage Complete for Windows has two separate icons: one for the capture program and one for the image-editing and -cataloging program. You have the option of capturing the active menu, title bar, menu bar, client, or window, the whole screen, custom coordinates, multiple selections, or last coordinates. You can set the timer from 0 to 300 seconds. You can capture images to any of ten formats (including TIF, PCX, BMP, and GIF) in any of the following color levels: 16 gray scale, 256 gray scale, 16 colors, 256 colors, 16 million colors, or monochrome. It supports TWAIN, so you can use your TWAIN-compliant scanner to scan images directly into Collage Complete.

Pizazz Plus 4.0 (Application Techniques, 10 Lomar Park Drive, Pepperell, Massachusetts 01463; 508-433-5201; $149) has the simplest collection of tools under Windows of the three, but it can save to an incredible range of formats, most identified by applications, for which the image is custom formatted. It also has a recorder that remembers the transformations you perform on a graphic and can reproduce them on another graphic. The macro (called a recipe) can then be saved to disk.

Pizazz's DOS capture and manipulation program is the most complete, but its interface is a little overwhelming.

Graphics Tools (Delta Point, 2 Harris Court, Suite B-1, Monterey, California 93940; 408-648-4000; $99.00) offers a slightly expanded features list including autotrace and a bonus CD-ROM that contains 700 pieces of clip art, 100 photographs, and demonstration versions of other Delta Point programs. Delta Point is known for its charting program, Delta Graph and FreezeFrame ($69.95), another image-capture and file-conversion application.

Graphics Tools will capture and convert among more formats than Collage Complete, but it gives less control over the image as it is captured. The image is captured as a TIF file, for example, but you cannot tell it to capture in monochrome or 16 million colors. You can capture freehand, a window, specified coordinates, an area, or full screen. If you elect to capture a window, you can refine the capture to a menu, an icon, or a dialog box by clicking on the object you want to capture. The only way to capture a DOS screen with Graphics Works is from within Windows.

Whatever you choose, you'll find that graphics manipulation has entered an era of extreme interoperability.

Have a DTP tip you'd like to share? Let me know about it by calling (900) 884-8681, extension 7010203 (sponsored by Pure Entertainment, P.O. Box 186, Hollywood, California 90078). The call costs 95 cents per minute, you must be 18 or older, and you must use a touch-tone phone. Or write to "Art Works" in care of this magazine. And if you don't have a tip, call to let me know what you're up to, what software you're using, and how I can be of assistance. ❐

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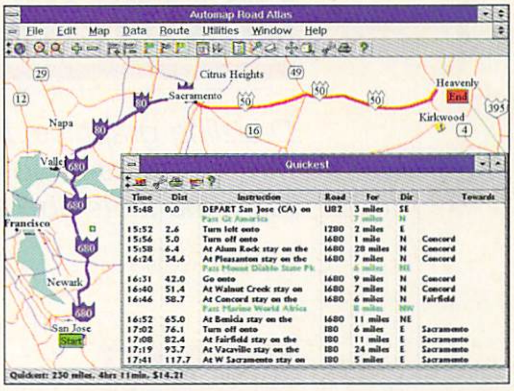

Time	Dist	Instruction	Road	For	Dir	Towards
15:48	0.0	DEPART San Jose (CA) on	U82	3 miles	SE	
		Pass Gt America		7 miles	N	
15:52	2.6	Turn left onto	I280	2 miles	E	
15:56	5.0	Turn off onto	I680	1 mile	N	Concord
15:58	6.4	At Alum Rock stay on the	I680	28 miles	N	Concord
16:24	34.6	At Pleasanton stay on the	I680	7 miles	N	Concord
		Pass Mount Diablo State Pk		6 miles	NE	
16:31	42.0	Go onto	I680	9 miles	N	Concord
16:40	51.4	At Walnut Creek stay on	I680	7 miles	N	Concord
16:46	58.7	At Concord stay on the	I680	6 miles	N	Fairfield
		Pass Marine World Africa		8 miles	NW	
16:52	65.0	At Benicia stay on the	I680	11 miles	NE	
17:02	76.1	Turn off onto	I80	6 miles	E	Sacramento
17:08	82.4	At Fairfield stay on the	I80	11 miles	E	Sacramento
17:19	93.7	At Vacaville stay on the	I80	24 miles	E	Sacramento
17:41	117.7	At W Sacramento stay on	I80	5 miles	E	Sacramento

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Circle Reader Service Number 137

DISCOVERY CHOICE

Dazzling graphics, full-motion animation, and crystal-clear sound effects bring dinosaurs to life as you learn the facts about these fascinating ancient creatures.

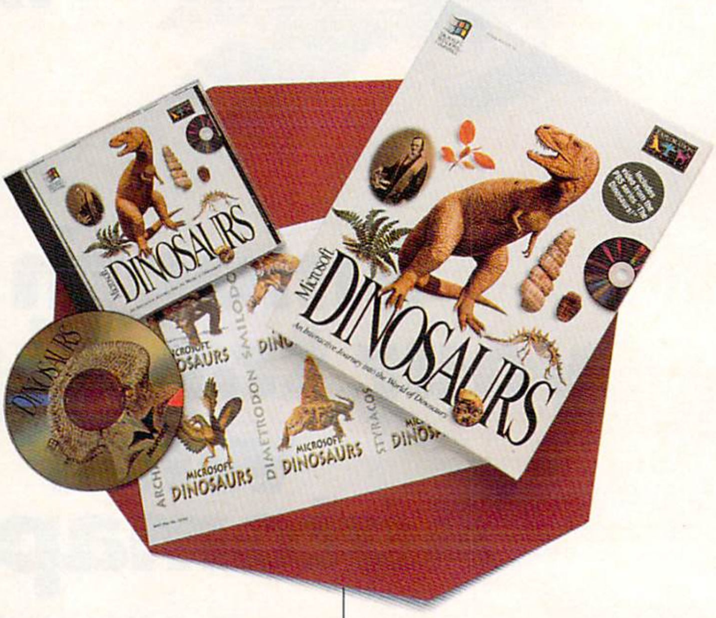
Scott A. May

MICROSOFT DINOSAURS

They say everything old eventually becomes new again. It must be true, because you can't get much older, yet more in fashion, than dinosaurs. From children's playful TV pals to big-screen terrors, these ancient creatures seem to fascinate us more than ever. Despite the renewed interest, however, myths and misconceptions persist. Microsoft helps bridge the gap between paleontology and pop culture with Dinosaurs, a brilliant interactive journey that takes you back in time.

True to its larger-than-life subject matter, this multimedia Windows CD-ROM packs a huge amount of information—nearly 400MB, including full-motion video, fantastic audio, and a gallery of beautifully scanned artwork. The main program weighs in at over 200MB, featuring a dazzling display of more than 1000 illustrations, 200 hypertext articles, and 800 pop-up windows. For dinosaur lovers, about the only thing better than this would be living next door to New York's American Museum of Natural History.

Big numbers are impressive, but they don't guarantee a good program. Atop this mass of megabytes sits a fabulous interface that allows the curious to explore in four ways: Atlas, Timeline, Families, and Index. For the timid, there's also Guided Tour, which is hosted by "Dino" Don Lessem, founder of The Dinosaur Society and editor of the *Dino Times.* His soft, folksy style uses humor to hook our curiosity and expert knowledge to keep us following his lead on 16 different tours. You can abandon a tour at any time if you find a subject that piques your interest. Unfortunately, there are no video bookmarks, which would allow you to quickly return to specific points of interest.



Atlas takes you where dinosaurs roamed, areas divided into six geographic regions: North America, South America, Europe, Africa, Asia, and Australia. Learn how each species adapted to its particular climate and social order. A fascinating sidebar, The Shifting Earth, offers a crash course in plate tectonics. Here you'll see how land movement created new continents, restricting animal migration and possibly dooming some species to early extinction.

In addition to the interesting sidebars that offer explorers more information, most of the program's screens sport special hot spots—hypertext links to additional information. Click next to Dimetrodon's sail to learn how this "reptile radiator" helped regulate the giant lizard's body temperature. Branch off yet again to discover creatures with similar radiator sails, such as the warm-blooded Spinosaurus. Like any good reference, these hot spots allow your imagination to wander. There are no wrong moves or dead ends, and to backtrack, you simply click on the back icon.

Timeline begins with a graphic representation of the earth's history, divided into four major eras: Precambrian, Paleozoic, Mesozoic, and Cenozoic. Each era is then broken into small chunks of time, called periods. You'll learn that all dinosaurs lived during the Mesozoic era—divided into the Triassic, Jurassic, and Cretaceous periods—roughly 160 million years, yet merely a drop in the cosmic bucket. When viewing such a grand scale, you can't help but be humbled by man's meager stake on terra firma. The Mesozoic era holds many hypertext links to the Atlas section, particularly the Cretaceous period, when dramatic plate movement and rising seas helped isolate many species. The end of this era saw the end of the dinosaurs. The program offers several dramatic theories to explain the cause of their extinction, as well as clues to some species that may have survived.

The section on families proves especially interesting for fledgling dinosaur explorers. It teaches the difference between the two main orders of dinosaurs—saurischians and ornithischians—designated, remarkably, by hip structure. You'll also discover that some creatures often mistaken for dinosaurs were actually reptiles, such as the flying Pterodactylus and Quetzalcoatlus. The who's who of dinosaurs is in this section, including the meanest (Tyrannosaurus Rex, of course), biggest (the plant-eating Sauropods), and smallest (the chicken-sized Compsognathus), among others.

Are you tongue-tied by these strange, multisyllabic names? You're not alone. That's why the designers included spoken pronunciations, one of the program's best features. Click on the speaker icon next to particular words or phrases, and you'll hear them pronounced in crystal clarity. Cindy Shrieve provides the voice; she also speaks the introductions to sidebar stories.

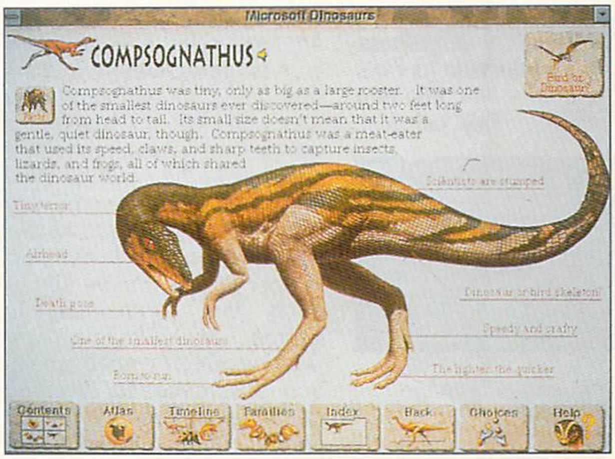
The fourth navigational option, Index, allows speedy access to every major article and species. Entries are both alphabetized and graphically displayed. Browsing through Index is also an excellent way to find articles on subjects you might otherwise miss, such as the fascinating art of skeletal reconstruction.

The program's multimedia highlight—six full-motion minimovies—was added almost as an afterthought just prior to release. Culled from the PBS series "The Dinosaurs," most feature quality animated watercolors, sound effects, and narration. The centerpiece film, The Hunt, was taken from Phil Tippett's 1984 work, *Prehistoric Beasts*. Filmed with stop-motion models, intricate backgrounds, and horrific sound effects, this exquisite animation depicts a deadly encounter between a Triceratops and a T. rex.

The program detects your current Windows graphics mode—either 16- or 256-color VGA—and loads the appropriate version. As you'd expect, the 256-color VGA graphics are stunning, from the stone-textured icons to the scanned artwork and digitized photos. The big surprise is the outstanding quality of the 16-color VGA version: Apart from only a slight loss of detail due to the dithering process, the graphics are just as attractive using a 16-color palette. This is especially good news for users with unaccelerated video cards, as well as those who simply don't want to switch video modes to run the program. Somewhat of a system hog, the program task-swaps well but prefers your system's undivided attention. Running resource-heavy applications in the background will slow Dinosaurs to a crawl.

Microsoft forgoes a printed manual in favor of online graphic help screens. Overview Movie is a special feature that helps new users; a talking tour of the program's main functions, it's delivered in the humorous style of a vaudeville revue. Another helpful option is the ability to print virtually any screen or active window, in either gray scale or full color. The overall quality is excellent, but because these are screen dumps, graphics will print better when they're displayed in 256-color mode.

Believe it or not, there's more: Attached to each dinosaur profile is a Fact Card, a printable index card containing a full-color picture, an information chart, an interesting fact, and a scale drawing. And there's the dinosaur art gallery, complete with 50 high-quality pictures that can be exported via the Clipboard or turned into wallpaper for a Windows background. There are even two built-in screen savers, your choice of stomping dinosaur feet or dinosaur heads. Finally, a slide-show option displays randomly selected program screens for those who simply can't decide where to begin.



Compsognathus was tiny, only as big as a large rooster. It was one of the smallest dinosaurs ever discovered—around two feet long from head to tail. Its small size doesn't mean that it was a gentle, quiet dinosaur, though. Compsognathus was a meat-eater that used its speed, claws, and sharp teeth to capture insects, lizards, and frogs, all of which shared the dinosaur world.

Both highly entertaining and educational, Microsoft Dinosaurs is a wonderful blast from the past. The next time you're asked what the storage capacity of a CD-ROM is, just smile and say, "About 160 million years." ❐

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GAME INSIDER

Shay Addams

THE YEAR OF THE SIM

MicroProse, acquired recently by Spectrum HoloByte, has quietly killed its animated adventure game department. In early fall it shipped Bloodnet, a role-playing game from the Paragon design team, but Dragonsphere will be the last such quest, and the company is also dubious about a follow-up to Darklands.

MicroProse will return to producing the kind of games that made it famous: simulations such as F-14 Fleet Defender, which should be on the shelves now, and strategy games like Sid Meier's Civilization. The Civil War sim Meier was working on has been put on hold until at least the fall of 1994 while he finishes CPU Bach for the 3DO. And he may decide to do an add-on for Civilization (or even a brand-new version) first—maybe something like Civilization in Space. MicroProse's new Coaches Club Football simulation and a space strategy game called Masters of Orion should already be in the stores.

MicroProse returns to its roots with F-14 Fleet Defender.

More sims. Simulations continue to multiply, perhaps because so many kinds of games—planes, tanks, city builders—fall into this category. One of the most unique is Detroit, Impressions' ultimate automobile simulation. Detroit re-creates various aspects of the automobile industry by providing the tools for designing and mass-producing your own car. Marketing plays an important role in this resource-management challenge.

Interplay is doing CD-ROM versions of Maxis's SimCity, SimEarth, and SimAnt. The company is revamping each game extensively and adding digitized video. A 40-person film crew is currently shooting footage for the CD-ROM version of SimCity, which is due out in the spring. The SimAnt CD-ROM should be on the shelves now. Interplay also released a CD-ROM version of Alone in the Dark recently, and at press time the company was saying that it hoped to ship an Interplay tenth-anniversary CD-ROM with Wasteland and nine more of its biggest hits by Christmas. Stonekeep, Interplay's landmark role-playing game, is now set for a spring release.

Not a simulation. The computer game industry is a bizarre one. You'd expect the hottest title from a company called Strategic Simulations to be a simulation, or at least a strategy game. But it's actually the latest release in the AD&D role-playing series, an all-new world set in the time of *The Arabian Nights*. Al Qadim is the name of the fantasy world, and Genie's Curse is the first role-playing game that takes you there. Unlike most AD&D games, it's a one-character quest. Your character is pregenerated, allowing you to jump right into the action.

You can get a batch of adventures in Legend Entertainment's Spellcasting Party Pak, which contains all three of Steve Meretzky's wacko Spellcasting games. Two recent Legend adventures, Eric the Unready and Gateway 2, have been released on CD-ROM. For something new from Legend, try Companions of Xanth, which sports a new, easier-to-use interface. Legend's Bob Bates calls the adventure, based on the works of popular fantasy writer Piers Anthony, the company's "most beautiful" adventure.

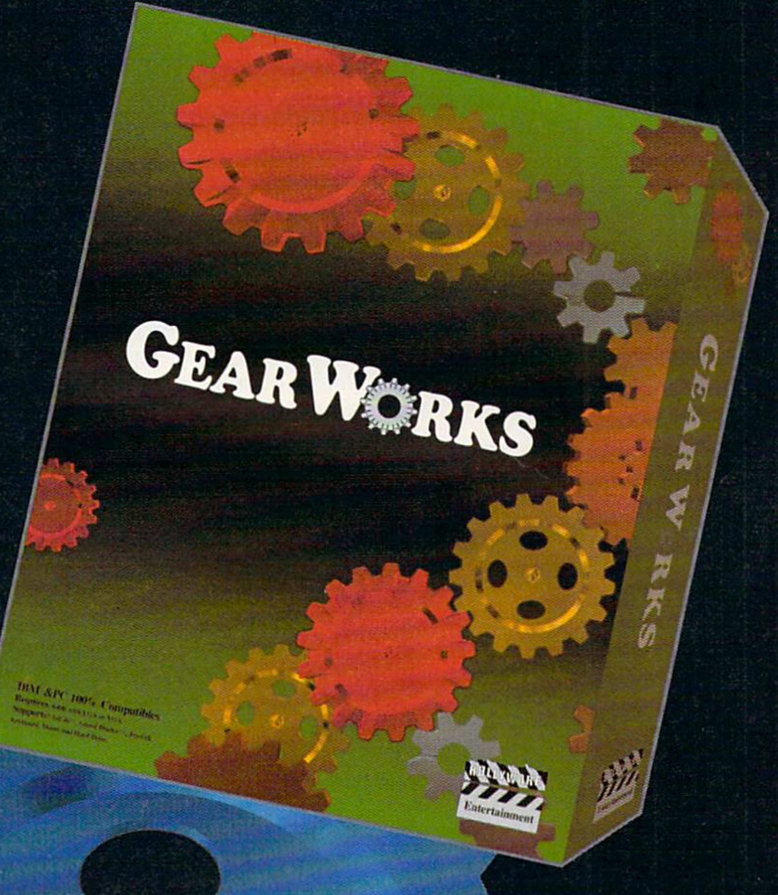
Better late than never? You may have noticed that a few of the games I reported on in recent columns have inexplicably missed their ship dates—not an unheard-of event in the world of computer games, certainly, but that's no excuse for less-than-accurate coverage by a game insider such as myself. Sir-Tech has rescheduled Jagged Alliance from last fall to this spring, for instance. The second title in its Realms of Arkania series, Star Trail, is now planned for January or February. LucasArts' The Dig, Brian Moriarty's graphic adventure, is now set to hit the shelves in late spring. (I did learn that the mysterious Hollywood type involved in the project is none other than *Jurassic Park* producer Steven Spielberg. After deciding that a story he wanted to produce for the screen might work better and cost less as a computer game, he teamed up with Moriarty at LucasArts.) However, last month, when I said TIE Fighter would dock in time for Christmas, that was *my* mistake—I confused it with B-Wing, the X-Wing mission disk. TIE Fighter is a spring product.

Buttoned down for a dogfight. The most effective flight peripheral I've seen in years is the new CH Flightstick Pro. Based on the classic CH Flightstick, it's armed with three extra buttons atop the stick and a coolie hat that serves as a four-way switch. All the advanced flight sims support the new buttons for game-specific functions such as dropping bombs or switching guns. Most of them use the coolie hat to shift between views from the cockpit. I've seen similar features on more expensive joysticks that weren't as well engineered, and I highly recommend the Flightstick Pro. (The extra buttons require a two-stick game card; many inexpensive multifunction cards only support one stick.) If this stick doesn't improve your scores, you may as well go back to Pong. ❒

Over one hundred play areas to test your reflexes and intelligence.

GEAR WORKS!

This puzzle game will keep your gears spinning!



Gear Works is the most unique puzzle game to hit the market in years. In Gear Works you will connect gears of various sizes and colors together in order to transform Twelve Wonders of the Ancient and Modern world into time pieces, while racing against time and friction. Watch out for the Pottins, two gremlin like creatures, that will torment you by rusting the gears and breaking off the mounting pegs.

Game features: Various gear types, over one hundred puzzles to solve, bombs to blow up incorrectly placed gears and a gun to shoot those pesky Pottins off the play area.

Available in IBM PC and Amiga computers.

Check your local retail stores for Jonny Quest®-*Curse of the Mayan Warriors* and other HOLLYWARE Games.

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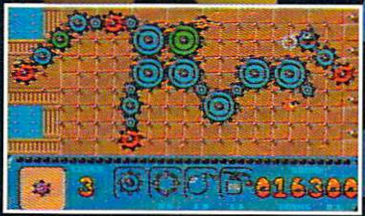

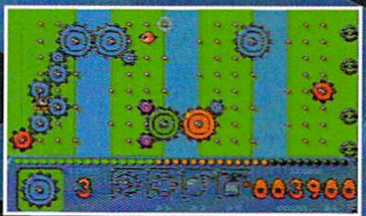

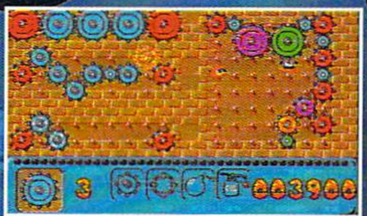

HOLLYWARE Entertainment

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Lead fleets of starships in interstellar battles as you fight to save the Federated Worlds in this realistic space-opera simulation.

Keith Ferrell

RULES OF ENGAGEMENT 2

RULES OF ENGAGEMENT 2
Strategic Starship Combat At Its Very Best
Impressions
Omnitrend
Builder Manual

Can software re-create science-fiction experiences? This is a question that's been addressed by most of the major entertainment software publishers at one time or another. For some publishers, it's *the* question. Omnitrend, for example, has devoted most of its energies over the past decade to creating interactive interpretations of a particular type of science fiction, the space opera. Its latest game, Rules of Engagement 2, may well be the finest science-fiction simulation ever developed.

Space opera is one of the grand traditions of literary science fiction. Like its antecedent, the horse opera, space opera works from several givens. Fleets of mighty starships substitute for the cavalry and the bad guys. Space operas often are set along frontiers, with colony worlds serving the roles played by prairie towns. Climactic battles are preceded by smaller confrontations, the stakes rising with each new conflict.

Of course, horse operas are pretty much restricted to rifles, pistols, and the occasional Gatling gun, while the space opera at its most ambitious can hurl whole solar systems into different continua. *Crashing Suns,* for instance, is the title of one of the earliest space operas.

At its best, space opera is more than just adventure fiction. Good space opera should be good science fiction as well, taking place in a carefully designed and delineated universe that is self-consistent within the bounds of the story that contains it.

Space opera—or what passes for it—has played a large part in the interactive entertainment explosion. And that's not surprising, as space opera has played perhaps the dominant role in all electronic media forms of science fiction. "Star Trek" is essentially a space opera, and the Star Wars saga is little more than that. Interactive space opera has tended to follow the Star Wars pattern: lots of arcade action, speed, bells and whistles, and little attention to or reflection upon what actual interstellar combat might be like.

That sort of reflection and attention is exactly what Omnitrend has brought to its science-fiction simulations. Its simulations follow three separate, though interlocked, tracks, all set within the same universe. One of the Omnitrend series, Universe, deals with interstellar exploration, trade, and settlement. Then there's the Breach series, which focuses on ground-combat troops. And third is the Rules of Engagement group, which puts players in charge of fleets of military starships.

All of the games take place in the same self-consistent universe, and a very strange and dangerous place that is. Like most good science-fiction universes, this one has a history. According to the Omnitrend scenario, over the next century the human race develops faster-than-light travel and begins the colonization of planets in our local galactic area. Humans being a fractious species, factional differences develop, and humanity splits into two groups: the Federated Worlds (you) and the United Democratic Planets (them).

There are also aliens of various levels of malevolence and competence. And, in the best science-fiction tradition, there are remnants of an ancient and very advanced species. This is a remarkably well thought out universe, full of details that lend just enough credibility to suspend disbelief. As illusions go, the Omnitrend universe is quite convincing.

Of the games set in this universe, Rules of Engagement 2 is by far the most ambitious. It's a campaign-oriented game: You start out as a cadet and work your way up the ranks, facing larger challenges and commanding more powerful forces with each advancement. A beginner campaign is included, but you'll quickly find yourself facing large combat and command challenges.

Command, not incidentally, figures largely in the game. In the more advanced scenarios, you'll find yourself with whole fleets of ships at your disposal. It's your responsibility to select individual ship commanders from the roster of those available. All the characters have their own traits, competencies, and vulnerabilities—any one of which can affect how they respond to your orders.

Once you embark upon a campaign, you're in the center seat of the flagship, which can be a lowly transport traveling solo or a mighty dreadnought leading a fleet, depending upon the mission configuration. (Actual ship selection is up to you, but each scenario gives you only a certain number of configuration points to spend, which means that you can't get the best ship every time.)

The command interface is a marvel: Not only is it effective and sensible, but it also has a design that serves to enhance the game's illusion. This thing feels like a starship command center.

You're presented with a variety of ship systems: tactical, navigational, communications, damage control, and docking. Within each system are subsystems specific to tasks at hand, such as selecting missiles for combat or loading and unloading cargo. Your monitor screen can be divided into command quadrants, with the quadrants displaying different systems or subsystems within a larger group. Tactical command, for example, gives you access to fire control, defensive shields, positioning relative to the enemy, and more. Included in communications are both transmission and reception. Navigation houses the helm, maps, and long-range sensors. You'll learn quickly which arrangements work best in different situations.

You'll also learn—with luck, rapidly—to coordinate the systems during combat. Often, your enemies are better armed and equipped than you. The simulation gives you the tools necessary to crack each scenario, but it requires you to learn as you go; of course, that further enhances the game's career advancement motif.

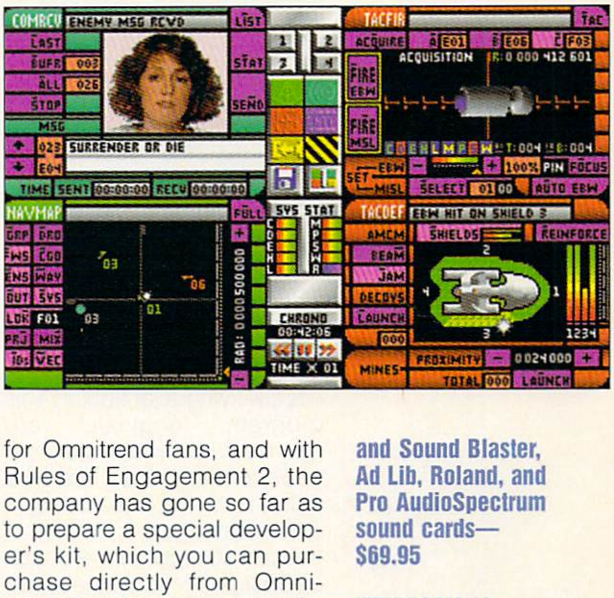
If you also play Omnitrend's Breach series, you can interlock the games, moving from Rules of Engagement 2's starship command to Breach's ground-force command as you board and seek to capture enemy installations. The next release of Universe will also interlock with Rules of Engagement and Breach.

Documentation is extensive, thorough, and refreshingly well written. You'll want to pay attention to the breakdown charts of ship and system capabilities; there's information there that will affect your weapons selection and possibly turn the tide of desperate battles.

And the battles do get desperate. Systems can be damaged or knocked out; capabilities can be diminished. Allies respond in realtime, and the clock is always running. You may need full power in three minutes, to borrow a cliché from another space opera, but if the simulation runs six minutes before full power is available, you may be out of luck. There are no TV space-opera miracle workers here.

Rules of Engagement 2 is a high-level simulation that demands good equipment. It will run on a slow 80386, but a faster machine makes it sing. (Actually, it talks, if you have sound support.)

Scenario design has become an important pastime for Omnitrend fans, and with Rules of Engagement 2, the company has gone so far as to prepare a special developer's kit, which you can purchase directly from Omnitrend. Additional scenarios for the game are already popping up on bulletin boards and online services.



ENEMY MSG RCVD

SURRENDER OR DIE

EBW HIT ON SHIELD 3

Rules of Engagement 2 is a serious simulation and a masterpiece of interactive science fiction. Software space opera doesn't get any better than this. It's a game—and a vision of the space-operatic future—that would do Poul Anderson, Jack Williamson, or E. E. Smith proud. ❐

Circle Reader Service Number 393

16-MHz IBM PC 80286 or faster (25-MHz 80386SX or faster recommended), 640K RAM (2MB recommended), VGA, hard drive with 8MB free; supports Microsoft-compatible mouse, math coprocessor, and Sound Blaster, Ad Lib, Roland, and Pro AudioSpectrum sound cards—$69.95

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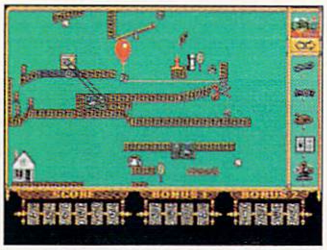
GAMEPLAY

Denny Atkin

COASTERS AND RUBE GOLDBERG

And now for something completely different! Only computer gamers could find themselves in a rut because they've spent too much time exploring dark dungeons, flying F-16s, and playing professional football. If you want to try something really different, both Disney and Sierra/Dynamix offer breaks from the ordinary. And amazingly, in today's world of 20MB games, each of these games ships on a single high-density floppy.



The Even More Incredible Machine presents you with 160 Rube Goldberg–esque challenges.

Coasting along. Disney's Coaster takes you off the flight line and into an amusement park, but at the speeds and altitudes you'll reach here, you may forget you're not still flying a jet fighter. This program, originally announced last year, is a construction set that lets you build, test, and ride your own roller coasters.

You'll start out in the Coaster Design section, where you can create your ride from scratch or modify one of a number of existing designs on a 640 × 480 VGA screen. You've got straight track, curves, loop-the-loops, and corkscrews to choose from. Sections can be different lengths, they can climb or plunge at angles up to 60 degrees, and they can twist up to 50 degrees in curves. Sections of track can be lifters or accelerators, or they can be equipped with brakes. You'll need a mouse for this section of the program, which has to be one of the easiest-to-use construction sets I've ever encountered.

Track design is fun, but you've got to be careful. One of the most difficult aspects is making sure that the final section of track can actually wrap around and meet the platform again. If you ever created your own track layouts with model trains or electric racecars when you were a kid, you'll recognize this difficulty—you create what would have been the perfect layout, except there's no way to get the track back to where you started building it.

Once your track is laid out, it's off to the Ride screen. Just select Ride from the pull-down menu, and you're in the coaster car. Note that if you haven't installed the upstops, which keep the car from flying off the track, or if your track ends in midair, you won't be able to get anyone to board your coaster. Click the mouse button to launch, and you're in for a wild ride. Fast graphics and realistic sound effects make the ride a fun experience, but it's not very interactive. You do have buttons to accelerate or brake if you find that you haven't quite planned the proper amount of momentum in your coaster design, but that's the limit of interactivity here. Most of the game is in the designing, not the riding. After the ride's finished, you can get opinions on your coaster from a panel of evaluators. These will range from "Well, lasso me to a bronco! That was one of the best trips I've ever had!" to "I've seen better speed bumps at the post office." The Signature screen lets you examine a graph that shows the lateral and vertical g's achieved, maximum speed, longest drop, and other stats.

Once you've perfected your design techniques on Earth, you can try again with moon or Jupiter gravity, which can make for some interesting design problems.

Coaster is a winner in many respects. The only problem is that the graphic updates are too fast on a speedy PC, making loops nothing more than a blur. If you're the type who enjoys building for building's sake—if your fondest childhood memories involve Legos and Tinkertoys—you'll love this little game. It's a bargain at only $24.95.

TIM's back. From Jeff Tunnell Productions comes Sierra/Dynamix's latest puzzler, The Even More Incredible Machine. If you played The Incredible Machine, you know what to expect, as TEMIM offers 160 new levels with everything that made the first game fun. If you're not familiar with the series, TIM and TEMIM essentially put you in the role of Rube Goldberg. You have to create complex, interconnected contraptions to accomplish goals that range from popping balloons to saving a little white mouse from a hungry cat. You connect pulleys, motors, jack-in-the-boxes, ropes, balloons, and many other parts to try to set off reactions that will accomplish your goal. The puzzles range from really easy to, at the end, well, really puzzling. My favorite aspect, though, is that the game is smart enough to let you win even if you pick a solution that may not have been what the programmers intended. Many times, I've solved the puzzles and had parts left over. TEMIM is extremely easy to learn, and both young kids and adults will find hours of enjoyment here. I know I did—I installed TEMIM at 9 p.m. and didn't get to bed until after 3 a.m., and many, many levels of play had passed. ❐

BEWARE,
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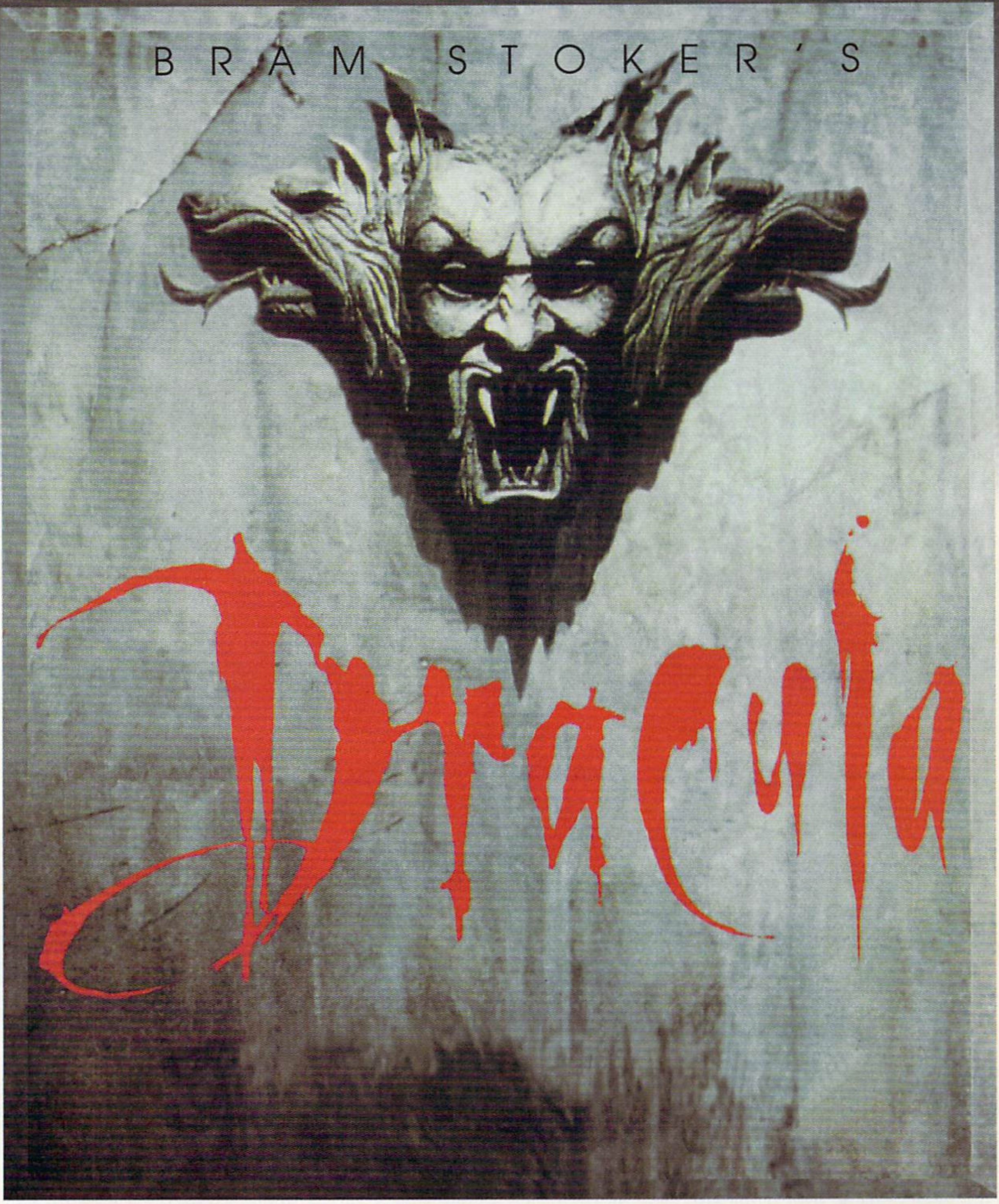

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TRAVEL TO EXOTIC LANDS, MEET STRANGE CREATURES AND BLOW THEM AWAY!

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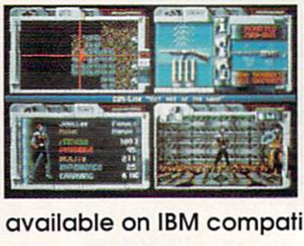
You've always considered yourself a soldier of fortune with a knack for survival and a thirst for green. Your mission? Anything for a price. But this time it's different. The stakes are a little bit greater and the danger is all too real. You and your team are on a desolate moon, surrounded by less than friendlies, with only one goal besides the mission itself; stay alive long enough to enjoy your newfound wealth.

Hired Guns is an adventure that can accommodate up to four players simultaneously. It features furious non-stop action, first person 3-D view and auto-mapping of the 1.7 million cubic meters of play area. Choose from 12 different richly developed characters to suit your needs for the mission at hand. Journey through this desolate land, all the while testing your survival skills. And remember; TAKE NO PRISONERS!



Hired Guns is available on IBM compatible and Amiga formats.

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Circle Reader Service Number 226

There's no application that's more demanding on your PC than a good game—here's how to make sure your machine has what it takes to perform.

BUILDING THE ULTIMATE GAME MACHINE

ARTICLE BY PAUL C. SCHUYTEMA

Your face is washed in green from the infrared sensors; all around it's dark, silent except for the rhythmic whooshing of your rotor blades. Your left hand pulls back on the collective, increasing the lift of your Comanche helicopter. Your right hand thumbs your view left, then right; and the chopper lifts slightly, maintaining a steady hover in the South American night. Your feet, secured in control pedals, shift slightly, altering the speed of your tail rotor, twisting your craft starboard. A valley lies ahead—low passage into enemy radar territory. You push your joystick forward, cycling through your weapons systems with a thumb button. Only feet above the shallow river, airspeed nearly 200 miles per hour, you swoop in for battle.

A scene from the latest action movie? A training simulator for the new army? No, it's only a home computer resting on a desk in a small Midwestern town, and you're just playing a game.

What parents jokingly (and fearfully) called an obsession for their children—mindless, countless hours glued to a television set, Nintendo controller in hand—has evolved into a sophisticated, intelligent adult hobby. With the continued evolution of the PC and the savvy marketing strategies of the game-publishing industry, the PC game market has blossomed. Entertainment marketing leaders realized years ago that we adults, admittedly or not, want to play, and that we want more than just jumping, shooting, and collecting power pills: We want a complete experience.

But why is it that on your machine the latest, superhyped game is a dud? Your system probably doesn't have the power to entertain. PC games have evolved to a level of sophistication not even dreamed of a few years ago. It has only been in the past three years or so that PC games have begun to eclipse the playability of the Sega Genesis or the Super Nintendo systems. Even as late as a year ago, if you really wanted to play a great, fluidly animated football game, you had to look to cartridge systems. Now, thankfully, all manner of simulations and adventures abound on the PC, providing enough depth to entertain intelligent adults for months on end.

The Price of Power

Of course, the cutting edge of entertainment software comes at a price. Nowhere in the PC software industry does a group of products ask more from its hardware. A typical flight simulator will push your computer to its limit, making it breathe a sigh of relief when it merely has to calculate the sales statistics for a company of 500 employees. The games hitting the market now require the most powerful processors, hefty chunks of RAM, and large tracts of hard disk real estate.

In addition to the hardware requirements, the PC game market is rich with support systems, from peripherals such as sound cards or voice recognition systems to advanced, programmable flight controllers and even entire cockpit systems.

So what is a person to do? What is the ultimate PC game system? If you're a serious hobbyist looking to set up a solid, long-lasting computer system, there are a few guideposts that will help you on your way. Follow these steps to build the ultimate game machine; then sit back and enjoy gaming as it was meant to be.

The CH Flightstick puts power in your hands and delivers ultimate control.

Get a Solid Foundation

First, you'll want a solid base on which to build. Your CPU and memory capabilities are of utmost importance. Look into a 486DX2/66 computer system. Currently, the Pentium chip is still too new to be an absolute safe bet, but a 486 will provide you with enough computing muscle to handle even the most demanding game programs.

To support your CPU, you'll need RAM and hard disk space—and the more of it, the better. Don't even consider settling for anything less than 4MB of RAM. Ideally, you'll need a system with 8MB–16MB. You can have more than 16MB, but if you do, you run the risk of running into addressing problems and the potential for program crashes. So think twice before heading off to buy 32MB.

Your hard disk is probably your most vital asset, so choose a brand-name drive such as Quantum, Maxtor, Western Digital, or Seagate. As opposed to RAM, where too much might not be a good thing, hard drive space is never, ever a hindrance. Buy as large a drive as you can afford. Consider a 200MB hard drive as the smallest to accept, with 400MB or more and a fast access time (less than 18 ms) as your best bet, unless you can afford better.

Budget for the Best View

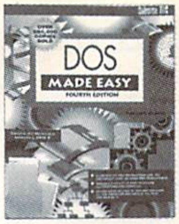
After storage, your monitor system is the most crucial component of your game system. Seek out the best noninterlaced monitor you can afford. One that's 15–17 inches is best, and make sure that it supports VESA standard modes. You'll also need a video card to control your monitor; there are plenty of good choices here. To shoot for the best, get a local-bus motherboard that supports the VL-Bus (see the November issue of COMPUTE for an overview of the various PC bus standards). This will allow your VL-compatible video card to operate at 33 MHz on an 80486/66 system (considerably faster than the 8-MHz ISA plain-vanilla video system used on most computers).

All computers come with a floppy drive, and a single 3½-inch drive is becoming the standard. Because of this, a 5¼-inch drive is no longer a necessity. You will, however, want a CD-ROM drive to sit in that vacant drive bay. Many systems now come bundled with CD-ROM drives at very reasonable prices, but be sure you get one that has a fast access time (under 300 ms) and is Photo CD compatible.

Currently, CD-ROM drives offer three different methods of getting the disc into the drive. First is the removable case: Much like the CD-ROM's own jewel box, it consists of a plastic housing with a metal shutter into which you place the disc; you slide the entire unit into the drive. The second method features a lightweight tray that slides out from the drive on which you place the disc, much as you do with audio CD players. The third allows the entire drive to slide out, flipping open its lid so you can insert the CD-ROM. While the first method can be annoying, it's a good choice if you'll have children using your system. A youngster is likely to force and break one of the integrated trays, necessitating a costly repair. The caddies are only a few dollars each, and you can buy several in which to store your most-used CD-ROMs or your children's CD-ROMs.

Software Tricks Expand Your System

In addition to getting the right hardware, you'll need some software tools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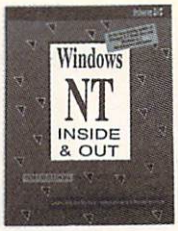
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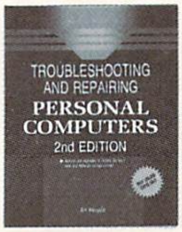
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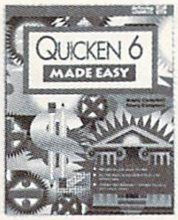
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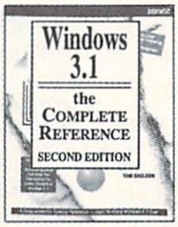
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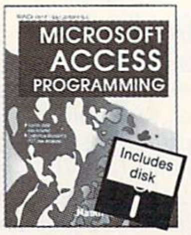
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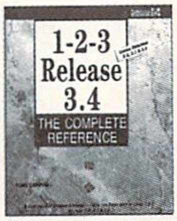
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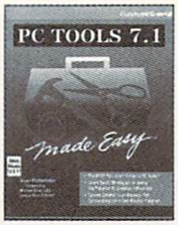
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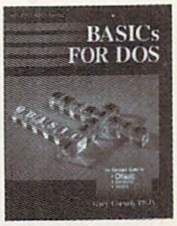
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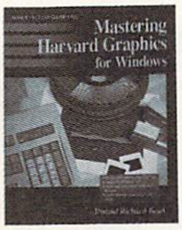
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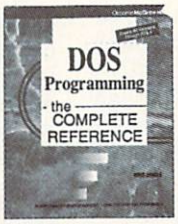
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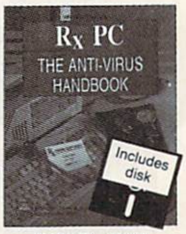
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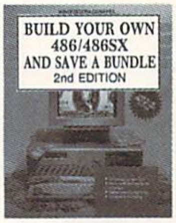
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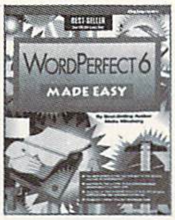
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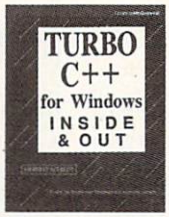
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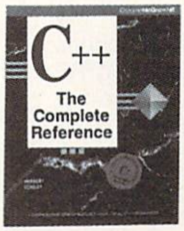
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Cache of Ultimate Games

Each month, the technology envelope is expanded, and games are able to do more to bring us a complete experience. Below is a list of essential games—some of the best software out there just waiting to feed off the power of your ultimate game system.

Betrayal at Krondor

A fantasy game set within the fictional world of Raymond Feist's Riftwar saga, this game uses Dynamix's 3Space system (borrowed from the company's flight simulator programs), and the rotoscoped animation gives combat a hauntingly realistic feel. The game is played in chapters, and the depth of the characters and subplots is amazing. An 80486/66 allows you to set the movement increments to the smallest setting, creating the illusion that you're truly walking in this alien world.

Dynamix
Distributed by Sierra On-Line
(800) 326-6654
$69.95

Comanche Maximum Overkill

This near-future helicopter simulator, which utilizes fractal mathematics to generate incredibly realistic terrain, has recently been improved by the addition of a mission disk. Now you can fly over icy streams and hot desert canyons, battling more tenacious opponents than before. Playing Maximum Overkill on an 80486/66 with the full array of Thrustmaster controls is an experience that shouldn't be missed.

Nova Logic
(818) 774-0600
$69.95
Mission Disk One—$39.95

Front Page Sports: Football Pro

For years, the animation required to make an entire football team look realistic was beyond the power of the PC; hence, we had years of programs with blocky running backs or simply numbers floating above the field. FPS: Football Pro and high-powered PCs have changed that. Now you can view rotoscoped players in realistic detail. FPS: Football Pro is an armchair quarterback's dream come true, with complete playbook editing, allowing you to create any type of offense or defense imaginable. With the ultimate game setup, the play is smooth and fluid, and you rarely have to wait for the program to access the hard disk.

Dynamix
Distributed by Sierra On-Line
(800) 326-6654
$79.95

Links 386 Pro

This photorealist golf game is starved for computer power, but an 80486/66 is more than enough to satisfy it. Teeing off at Banff Springs, one of Access's latest courses, you have a breathtaking view of snow-capped mountains. Birds chirp in the background as your ball lands in the fairway, chipping distance from the green. As the view changes, the screen redraws in under five seconds on even the most realistic detail levels.

Access
(801) 359-2900
$69.95
Banff Springs course—$29.95

The 7th Guest

This is a milestone of computer technology, coming on two compact discs. The game places you inside an exquisitely rendered Victorian mansion. You must solve dozens of puzzles based on old Victorian parlor games and follow the adventures of six ghosts as they try to find the secret of the seventh guest. A fast computer is a must for this game, along with a fast CD-ROM drive and an advanced video card.

Virgin Games
(800) 874-4607
$79.95

Strike Commander

Origin's latest cinematic endeavor is a visually stunning F-16 flight simulator set in an interactive story in which you fly with a band of near-future mercenaries for hire. This game asks more from your computer than any other game released to date, but it rewards you with gorgeous graphics, a unique panning view made just for the Thrustmaster flight control system, and gameplay that will provide hundreds of hours of bogy-chasing enjoyment. With an 80486/66, you can perform quick, intuitive snap rolls and Immelmanns without bogging down the processor.

Origin
Distributed by Electronic Arts
(800) 245-4525
$79.95

VistaPro 3.0

While not a game, VistaPro is a fascinating product that allows you to render landscapes based on actual U.S. Geological Survey data. Using fractal technology and a wide assortment of options and controls, such as tree lines, haze altitudes, and cloud patterns, you can create superrealistic vistas of natural beauty. VistaPro allows you to create animations that take you on a journey through a virtual world. Rendering a scene at the highest detail levels takes just five minutes on an 80486/66.

Virtual Reality Laboratories
(800) 829-VRLI
$129.95

World Circuit

Get ready for a feeling of speed so mesmerizing that after playing, your real car will seem like a hopelessly underpowered slug. World Circuit is a Formula One driving simulation and easily the most advanced driving game yet produced. You can drive the complete international circuit of races, with each course painstakingly re-created, and you can adjust your gearing ratios and tire type for various race and weather conditions. World Circuit even allows you to control the frame rate of the animation behind the wheel.

MicroProse
(410) 771-0440
$59.95

X-Wing

Fly the same type of star fighter that Luke Skywalker flew to save the rebellion. This game is more of an advanced space-flight simulator than an action game, allowing you to tweak and adjust power configurations for maximum speed, protection, or firepower. All of the familiar sounds from *Star Wars,* from the plasma burp of the X-wing cannons to the banshee wail of a passing TIE fighter, truly throw you into the fiction of the game.

LucasArts
(800) STAR-WAR
$69.95

Arriving soon...

TOWER!

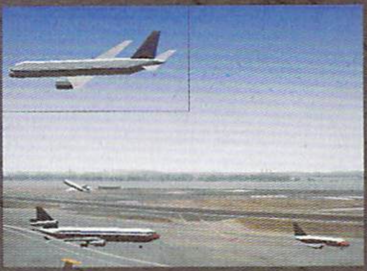
Tower cab simulator.

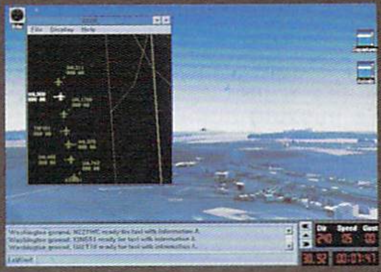
Tower puts you in the controller's chair high atop the tower cab of a major airport to choreograph the movement of the incoming and outgoing air traffic.

You control runway activity, ground crews and terminal traffic through a 360° scrollable out-the-window view with your keyboard or mouse. Local radar displays and easy-access information displays give you crash reports, news stories and more. You can also link, via modem, with Microsoft's® Flight Simulator® and Mallard's Air Traffic Controller™.

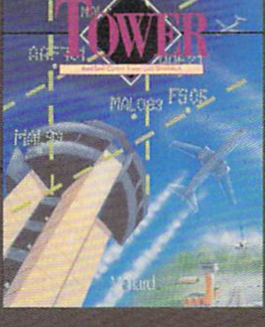
Character-style game play allows you to work your way up the 'corporate ladder' of each airport gaining perks, acquiring passwords to new levels and getting promoted accordingly. Points are scored depending on varying levels of traffic at different airports, types of pilots, time of day, weather conditions and the problems and emergencies that face the controller on the job every day.

Photo-realistic graphics and features like a 360° scrollable view and easy access information displays put you right in the middle of all of the action.





So if you think you're up to the challenge of directing traffic of a 'big league' international airport, get to your local software retailer for the arrival of ***Tower!*** From the publisher of today's hottest flight simulation enhancement products, Mallard Software. Who else?



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to build a solid game platform. First on the list is Microsoft's DOS 6. This recent update of the ubiquitous operating system implements two features essential for serious gaming: memory management and the ability to set up single CONFIG.SYS and AUTOEXEC.BAT files to handle multiple configurations. Today's top game software products are notorious memory hogs, and they need as much conventional memory (below 640K) as possible. DOS 6's MemMaker utility will optimize your startup files and give you the most memory possible. Also, many games require you to create a boot disk to provide enough memory for the game to run. DOS 6's ability to create multiple configurations, selectable by a menu at startup, is a true PC godsend. You may configure a default work setup, a game setup that uses EMS and one that doesn't, and so on.

If you're a power user who wants to play with the monster games, then MemMaker probably won't free enough memory. You'll need Quarterdeck's QEMM 7 memory manager utility, which not only will free up more than enough memory but will even optimize parts of your multiply configured system.

Finishing Touches

While the system I've been describing would make a great business system (yes, a game computer can also double as a true power user's workaday system), it's missing some of the essential components needed to transform it into an engine capable of simulating anything from jet flight to medieval sword combat. Without these finishing touches, your game machine will leave you cold.

Foremost of the trimmings are a sound card and a pair of quality speakers. For sound, consider a 16-bit card which features full Sound Blaster compatibility (still the standard for digitized effects and samples). Your best bets are either of the two 16-bit Sound Blaster cards or Media Vision's Pro AudioSpectrum 16-bit card. If you want even better sound, consider purchasing a Roland LAPC-1 or SCC-1 sound module to work in conjunction with your sound card. The result is unbelievable sound quality.

Tips

- If you're going to set up your system with a hard disk compression program, be sure to leave a healthy allotment of uncompressed megabytes for gameplay. Many games don't take kindly to compression utilities.
- With DOS 6's multiple configuration option and the ability to create menus in your startup files, you can create a layered menu system to access your library of games, thus bypassing DOS's somewhat cryptic commands.
- If you're putting together your system a piece at a time, pay close attention to the IRQs and DMA specifications of CD-ROM controllers, game cards, and sound cards. Write the information on an index card and tape the card to the side of your monitor, since some installation programs require you to provide that information as part of the installation process.
- If you're a true game junkie, consider adding a removable hard drive to your ultimate system. You can back up your game directories on the disk and easily copy them back to your hard drive if you ever need to reinstall them.
- Buy the best joystick you can afford; a cheap one is just that—cheap. If you can, try several out before you buy. Life is too short to play with inferior equipment.
- Purchase a small light for your desk. Playing games by the monitor's light is great for effect, but fumbling for copy protection keywords or a certain key on the keyboard requires just a touch more illumination.
- Consider purchasing a joystick platform, either for your desk chair or desktop. Control will be much more ergonomic, and hence your gaming will be more fun.
- Also consider a truly comfortable chair (you don't want to feel like you're at the office, do you?). I use a canvas sling lawn chair; it may look odd, but it feels just right.

To get the most out of your sound system, you'll need self-powered speakers. Several companies now offer three-speaker systems (a subwoofer and two satellite speakers) specially designed for PC use, and Roland manufactures the MA-12 speaker system, which will put more punch on your desktop than is heard in most home audio systems. Another good source of powered speakers is your local music shop. There, ask for help with self-powered studio monitors.

Finally, your system will need some form of input device other than your keyboard. Most systems now include a mouse, which is good for menu selection but not for serious gameplay. You'll need a joystick for that. If you're running a high-powered 80486 system, you'll be best served by a dedicated joystick controller card, such as the ones offered by CH Products or Thrustmaster. While many systems, as well as many sound cards, are supplied with integrated game ports, the ports are just not fast enough for smooth control on a speedy PC system.

For a basic joystick, none is better than the CH Flightstick. The quality and control will make you glad you spent the few extra dollars. For more advanced control options, especially if you enjoy flight or space simulators, you can choose from a wide array of options, such as the CH Flightstick Pro. CH Products also offers the Virtual Pilot, a smooth, hefty flight yoke (such as those found in Cessnas and other private planes) with a throttle control. The yoke is also excellent for driving games, but it's a little slow for fast-paced games such as X-Wing or the Wing Commander games.

Thrustmaster offers a complete system centered on its new Mark II weapons control system. The Mark II is a throttle control built for the left hand; it features seven customizable buttons. It's essentially a self-contained computer; you can write simple programs to completely configure the joystick/throttle system to the specific game you're playing. Thrustmaster also offers a flight control system in a military-style joystick featuring four buttons and a coolie hat at the top, enabling a flight sim jock to change the view with a simple flip of the thumb. For the ultimate in realism, you can get one of the company's rudder pedals for foot control of an airplane's rudder, enabling you to make such moves as supertight turns, slips, and precise targeting.

The ultimate game system is more than just a cutting-edge game machine; it's also an extremely powerful utilitarian computer, one which will give you years of use for under $3,000. Shop carefully, and if you're purchasing components separately, check with the manufacturers to assure compatibility.

A solid, high-performance PC system is the cornerstone of the exciting hobby of PC game playing, and it's a hobby that offers escape, excitement, challenge, and nearly endless variety. If you want to have serious fun, you need to have a serious system. Budget for these minimum ultimate game machine system requirements, and your personal computer will have the power to entertain. ❑

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TECHNOLOGY UPDATE

900 MHz breakthrough!

New technology launches wireless speaker revolution...

Recoton develops breakthrough technology which transmits stereo sound through walls, ceilings and floors up to 150 feet.

Breakthrough wireless speaker design blankets your home with music.

By Charles Anton

If you had to name just one new product "the most innovative of the year," what would you choose? Well, at the recent *International Consumer Electronics Show*, critics gave Recoton's new wireless stereo speaker system the *Design and Engineering Award* for being the "most innovative and outstanding new product."

Recoton was able to introduce this whole new generation of powerful wireless speakers due to the advent of 900 MHz technology. This newly approved breakthrough enables Recoton's wireless speakers to rival the sound of expensive wired speakers.

Recently approved technology. In June of 1989, the *Federal Communications Commission* allocated a band of radio frequencies stretching from 902 to 928 MHz for wireless, in-home product applications. Recoton, one of the world's leading wireless speaker manufacturers, took advantage of the FCC ruling by creating and introducing a new speaker system that utilizes the recently approved frequency band to transmit clearer, stronger stereo signals throughout your home.

Crisp sound throughout your home. Just imagine being able to listen to your stereo, TV, VCR or CD player in any room of your home without having to run miles of speaker wire. Plus, you'll never have to worry about range because the new 900 MHz technology allows stereo signals to travel over distances of 150 feet or more through walls, ceilings and floors without losing sound quality.

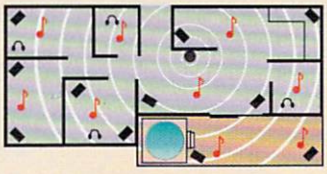
One transmitter, unlimited receivers. The powerful transmitter plugs into a headphone, audio-out or tape-out jack on your stereo or TV component, transmitting music wirelessly to your speakers or headphones. The speakers plug into an outlet. The one transmitter can broadcast to an unlimited number of stereo speakers and headphones. And since each speaker contains its own built in receiver/amplifier, there are no wires running from the stereo to the speakers.

Full dynamic range. The speaker, mounted in a bookshelf-sized acoustically constructed cabinet, provides a two-way bass reflex design for individual bass boost control. Full dynamic range is achieved by the use of a 2" tweeter and 4" woofer. Plus, automatic digital lock-in tuning guarantees optimum reception and eliminates drift. The new technology provides static-free, interference-free sound in virtually any environment. These speakers are also self-amplified; they can't be blown out no matter what your stereo's wattage.

150 foot range through walls!

Recoton gives you the freedom to listen to music wherever you want. Your music is no longer limited to the room your stereo is in. With the wireless headphones you can listen to your TV, stereo or CD player while you move freely between rooms, exercise or do other activities. And unlike infrared headphones, you don't have to be in a line-of-sight with the transmitter, giving you a full 150 foot range.

The headphones and speakers have their own built-in receiver, so no wires are needed between you and your stereo. One transmitter operates an unlimited number of speakers and headphones.



Recoton's transmitter sends music through walls to wireless speakers over a 75,000 square foot area.

Stereo or hi-fi, you decide. These speakers have the option of either stereo or hi-fi sound. You can use two speakers, one set on right channel and the other on left, for full stereo separation. Or, if you just want an extra speaker in another room, set it on mono and listen to both channels on one speaker. Mono combines both left and right channels for hi-fi sound. This option lets you put a pair of speakers in the den and get full stereo separation or put one speaker in the kitchen and get complete hi-fi sound.

These wireless stereo headphones have a built-in receiver.

Factory direct savings. Because of our commitment to quality and our factory direct pricing, we sell more wireless speakers than anyone! For this reason, you can get these speakers far below retail with our 90 day *"Dare to Compare"* money-back guarantee and full manufacturer's warranty. Through this limited time offer, the Recoton transmitter is only $69. It will operate an unlimited number of wireless speakers priced at only $89 and wireless headphones at $59 each. So take advantage of this special offer to fill your home with music. Your order will be processed in 72 hours.

Recoton Transmitter	**$69**	$4 S&H

Wireless products compatible with the Recoton transmitter:

Recoton Wireless Speaker	**$89**	$6 S&H
Recoton Wireless Headphones	**$59**	$4 S&H

Please mention promotional code **161-CU1113.**

For fastest service call toll-free 24 hours a day

800-992-2966

To order by mail send check or money order for the total amount including S&H (VA residents add 4.5% sales tax). Or charge it to your credit card by enclosing your account number and exp. date. Send to:

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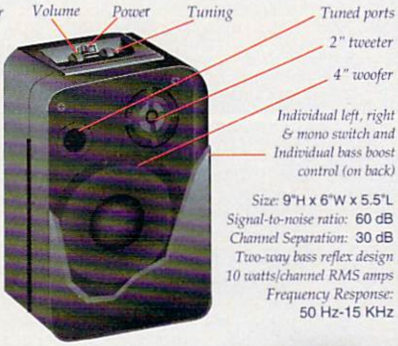
Midlothian, Virginia 23113

AWARD WINNING WIRELESS SPEAKER

Built-in receiver and amplifier:

The wireless speaker and headphones both contain a built-in receiver and amplifier. Signals are picked up and transmitted as far as 150 feet away through walls without the use of wires.



Volume
Power
Tuning
Tuned ports
2" tweeter
4" woofer
Individual left, right & mono switch and Individual bass boost control (on back)

Size: 9"H x 6"W x 5.5"L
Signal-to-noise ratio: 60 dB
Channel Separation: 30 dB
Two-way bass reflex design
10 watts/channel RMS amps
Frequency Response: 50 Hz-15 KHz

Don't take our word for it. Try it yourself. We're so sure you'll love the new award-winning Recoton wireless speaker system that we offer you the **Dare to Compare Speaker Challenge.** Compare Recoton's rich sound quality to that of any $200 wired speaker. If you're not completely convinced that these wireless speakers offer the same outstanding sound quality as wired speakers, simply return them within 90 days for a full "No Questions Asked" refund.

RECOTON CORP.
1992 International Summer Consumer Electronics Show
Design and Engineering Award

Recoton's Design and Engineering Award

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TECHNOLOGY UPDATE

$79 HOME THEATER
SURROUND + SOUND
BREAKTHROUGH !
SUPPORT YOUR LOCAL

Passive. *The HTS-1 is passive, meaning it requires no AC current. It actually sounds better than active decoders, producing more clarity, more detail, no noise, a greater sense of space and zero distortion. This superior system is a breakthrough unique to Chase.*

Active. *All Dolby Pro-Logic decoders (even the built-in units) are active, meaning they decode and amplify the signal electronically. This can induce noise and distortion, hindering the home theater experience. This is an example where "more is less." Spending thousands of dollars on an active system will not give you the performance of the HTS-1 decoder. Try it for yourself.*

How to get surround sound without buying the theater...

An amazing new surround sound decoder turns your existing stereo system into a multi-channel home theater.

By Charles Anton

As much as I love renting videos, it's just not the same as seeing a movie in a theater. I remember the first time I saw *Top Gun*. I nearly jumped out of my seat when the planes flew overhead. One of the reasons movies seem so real is because surround sound makes it seem like you're actually there. Now there's an incredible new device that lets you use a stereo receiver to get that same surround sound in your home.

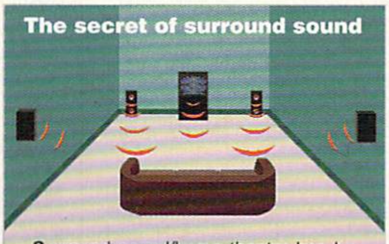
It takes more than just four speakers to get surround sound; there needs to be some way of separating the signals. The new Chase Technologies HTS-1 decoder does just that, and in a revolutionary way that rivals the best Dolby Pro-Logic and THX systems available.

Wins over critics. Gary Reber, editor and publisher of the most authoritative magazine on home theater systems, *Widescreen Review*, stated, "...passive matrix decoders such as the new Chase HTS-1 work great as Dolby Surround™ extractors, and sound exceptionally natural when used for motion picture soundtracks and music."

Passive circuit. In 1972, legendary audio pioneer David Hafler invented a passive circuit to extract the "L minus R" difference signals in stereo soundtracks. Because the circuit was patented, it was only available on expensive Hafler products. Now that the patent has expired, Chase can make this amazing decoding system available at a fraction of the cost!

Breakthrough technology. The HTS-1 is able to decode the Dolby Surround™ signal in a videotape or laserdisc because the spatial and depth cues have been matrixed into the "L minus R" portion of the two-channel stereo soundtrack. By decoding passively, the HTS-1 avoids costly and noisy signal processing. Plus you don't need any additional amps! Just connect the HTS-1 to your existing stereo system, add two speakers for the rear, and you'll experience the magic of home theater at a fraction of the cost of other systems.

The secret of surround sound



Surround sound/home theater has become the rage of the 90's because it adds depth and realism to stereo sound, giving you the home theater experience. It makes you feel like you're actually at a concert or movie theater. To "fill a room" with surround sound, you need more than two channels. That's the beauty of the HTS-1; it provides four channels of sound from any two-channel stereo source.

Free center channel. By connecting your VCR or laserdisc player to your TV, you get sound from your TV speaker; this acts as the fifth or "center channel." Adjusting your TV's volume gives you as much or as little "center channel" localization as you desire, without extra speakers or amps. There are also no extra costs with the "fifth" channel. When used with the HTS-1, you 'll have a true state-of-the-art five-channel system.

Concert sound. The HTS-1 also decodes the ambience found in all music recordings. This sense of space, or "concert hall acoustics," is present in all CDs and cassettes, especially live recordings. John Sunier, the leading authority on surround sound and producer of *Audiophile Audition*, a nationally syndicated radio program for audio enthusiasts, says, "...the new Chase HTS-1, when used to decode the hidden ambience in all musical recordings, definitely outperforms all the Dolby and THX processors which could cost you up to $3,000... I am impressed!"

The HTS-1 decoder makes your movies come to life, bringing the theater experience home.

Easy installation. Hooking up the HTS-1 is easy. Simply connect the speaker outputs of your receiver or amp to the HTS-1, then connect speaker wire to the front and rear speakers. The rear channel speakers don't have to be big. In fact, we recommend the Chase ELF-1 in either black or white finish to match your decor. They can be mounted with enclosed color-matched mounting brackets or can be flush mounted on the wall. They are also water and weatherproof, so they can be used indoors or out.

The ELF-1 rear channel speakers integrate perfectly with the HTS-1.

Risk-free home trial. Let's face it—the best way to evaluate surround sound is in your home, not in a showroom. That's why we're offering this risk-free home trial. We're so sure you'll be delighted with the quality of these products and the surround sound experience that we are giving you 30 days to try them for yourself. If they're not everything we say, return them for a complete "No Questions Asked" refund.

HTS-1 Home Theater Decoder............. **$79** $6 S&H

Speakers designed by Chase for the HTS-1:

ELF-1 Rear Channel Speakers ....**$99 pr** $6 S&H

Please mention promotional code 113-CU1112.

For fastest service call toll-free 24 hours a day

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To order by mail, send check or money order for the total amount including S&H (VA residents add 4.5% sales tax.) Or charge it to your credit card, enclosing your account number and expiration date.

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MICROSOFT PUBLISHER 2.0

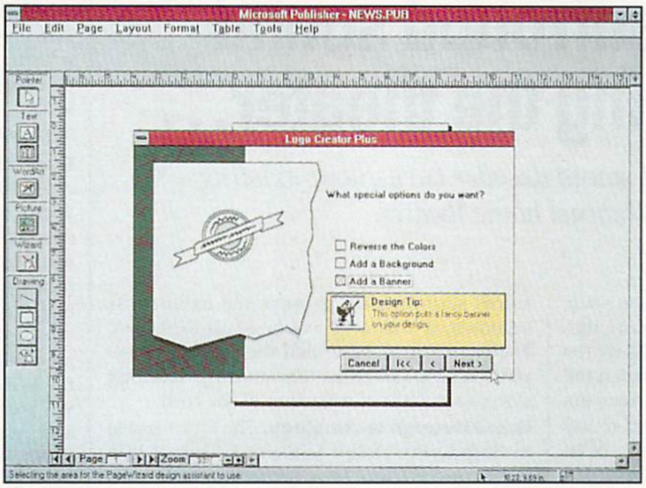
A blank page can be an intimidating thing; it can stymie even an experienced designer. To reduce such design stress, Microsoft has introduced its second version of Publisher with a host of helpful features for the growing number of page-layout laypeople.

Publisher 2.0 includes 35 new standard templates and 17 new PageWizard smart templates that automatically make everything from business reports to paper airplanes. The program abounds in automation, with features such as automatic text-wrapping around pictures and shaded objects. The Table tool gives you a choice of 21 formats with which to create tables, and the Shape tool lets you draw 36 different shapes, which you can manipulate in size and proportion to exactly fit your designs.

Even some of Publisher's help features are automatic. First-time help prompts you with help screens when you first use tools or features, and Print Troubleshooter tracks each print job and suggests problem remedies. Publisher is by far the most "helpful" program I've seen, offering eight variations of online assistance.

The program comes with 20 TrueType display fonts and more clip art and decorative borders than I care to count. All of this convenience is nice, but it promotes an if-I-can-do-it-I-should-use-it mentality. Microsoft realizes the potential for clutter and advocates restraint in the user's guide.

If the PageWizard templates could eliminate excessive design, they would be truly magical. But Publisher does the next best thing by starting you off with professional designs, including instructions and tips for tailoring the publication to your needs. Normally, design should follow content (form follows function), but you can get good results with these templates as long as you realize that you can't simply dump your text and pictures in and get automatic quality.



What special options do you want?

☐ Reverse the Colors
☐ Add a Background
☐ Add a Banner

Design Tip:
This option puts a fancy banner on your design.

Selecting the area for the PageWizard design assistant to use.

Microsoft Publisher 2.0 includes a set of improved PageWizards which can automate the creation of documents.

Much of the power of Publisher is hidden behind its easy-to-use interface. The program offers many features that high-end applications such as PageMaker have only recently included, such as drag-and-drop text editing, object embedding and linking, grouping and ungrouping capability, and incremental nudging of elements. Irregular-shape text-wrapping and the Shape tool are features PageMaker 5.0 doesn't even offer.

Yet, Publisher does have its limitations. It can't open more than one document at a time, which seems odd for such an otherwise powerful Windows program. You can run multiple copies of Publisher, however, which is almost as good.

Lining up objects accurately in Publisher can be difficult because you see only their outlines when you pick them up. This is fine for simple shapes, but text and pictures often need to be aligned by details within their frames. Judging alignment by their outlines is difficult guesswork.

You can rotate text in WordArt 2.0, an OLE program that's included with Publisher. Pictures must be rotated in other applications, such as Microsoft Draw, another OLE program. Publisher itself can only rotate line objects made with its drawing tools. WordArt can handle most of your text rotation, since it now supports TrueType fonts. But the smallest text that it can use is 12 points, so you can't place photo credits or other small text vertically.

Although Publisher can display and print 24-bit images (with proper hardware), its palette for line and fill characteristics is limited to 16 uneditable colors. High-quality color output is possible in spite of Publisher's limited color, but if you need specific spot colors or do four-color publishing on a regular basis, you might be better served by a high-end program with full-color capability. If you don't need color or if your final output will come from a color ink-jet or laser printer, the program's range of hues may be adequate. How often you use color, to what degree, and who does your printing should all be criteria in considering Publisher versus other programs.

Publisher works well as a design-for-dummies publishing program, but it would be a mistake to discount it as strictly an amateur's application. It's quite capable of producing professional results, with or without using autopilot. Just be sure that when you switch to manual, you don't overdo it.

PHILLIP MORGAN

Microsoft
(800) 426-9400
$199

Circle Reader Service Number 434

BALLPOINT MOUSE 2.0

Notebook computers are amazing. It's hard to believe that you can cram a 486 motherboard with 16MB of memory and a 200MB hard disk into such a tiny package. In fact, notebook designers have been able to miniaturize everything except the person using the computer. It's the user interface that presents the biggest challenges in these tiny PCs.

The screen, keyboard, and pointing device on notebooks all must be large enough to be usable but small enough to be porta-

From Those Wonderful Folks Who Gave You Gridlock, Blackouts and Runaway Taxes, Comes Raw Sewage, Yellow Journalism and the Subway at 3 a.m.

ble. Screens have made great strides in the last few years; keyboards haven't improved much and probably won't. Pointing devices are where the current action is, and with Windows running on nearly 60 percent of all notebooks, a good, solid pointing device is a must.

Most people would agree that, for a notebook computer, the trackball is the portable pointing device of choice. It comes closest to the mouse in terms of accuracy and control, and it occupies very little space.

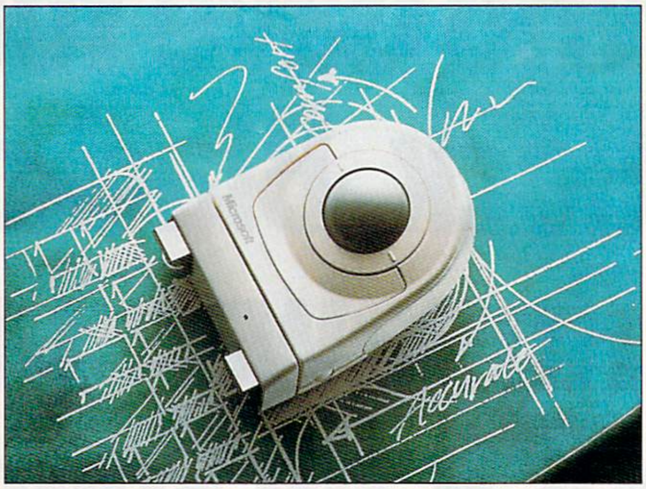
Microsoft has just introduced its newest entry into the trackball fray: the Ballpoint Mouse 2.0. It's smaller and sleeker than its version 1.0 big brother, and the trackball itself is much improved. In fact, with its silky smooth action and skid control, it rivals desktop trackballs. It's easily the best trackball I've ever used.

Right out of the box, you can tell the Ballpoint is different. Its new design fits your hand the way a pointing device should. The edges are smooth, and the underside sports a nonslip runner grip. The buttons are larger than they were with the 1.0 Ballpoint, and their position is different. Instead of the left and right buttons being on top of each other on one side of the mouse, the left button is on the far side and the right button is on top. There's a third button opposite the left button that becomes the main button for southpaws. (It can be reconfigured as the right button if you prefer.)

Like most other laptop trackballs, this device clips on the side of your notebook. It has small hangers that will fit most notebooks and allow you to close the case with it attached. The Ballpoint uses a PS/2 connector, and there's also a QuickPort version that simply snaps into any QuickPort-equipped computer. No serial-port version is available, however.

The Ballpoint also comes with a new release of the Microsoft Mouse Driver, version 9.01. With this new driver, you can not only adjust the buttons, as discussed above, but also control the size of the cursor; add mouse trails; make the pointer grow when you move the mouse; and adjust what Microsoft calls color, which in this case means choosing black, white, or reversed for the mouse pointer.

In addition to these features there are some other interesting options in the new driver. With Magnify, you can use a hot key to enlarge the area under the mouse pointer. With Snap-To, the mouse pointer automatically moves to the default button in a dialog box. Set Screen Wrap to on, and the pointer will move off one edge of your display and appear at the beginning of the opposite edge. Locate uses a hot key to move the pointer to the middle of the screen. Although Screen Wrap seems more like something you'd want to use as a practical joke, the other features are all useful, especially on a notebook. It's worth noting that you can use this version of the driver with your mouse, too, if you want to take advantage of the latest enhancements.



Microsoft's new Ballpoint Mouse 2.0 sports larger, more conveniently placed buttons and includes an improved driver.

Many notebooks these days come standard with pointing devices, but if yours doesn't, this well-designed, smooth, and surefooted trackball may be your best pointer bet.

CLIFTON KARNES

Microsoft
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$125

Circle Reader Service Number 435

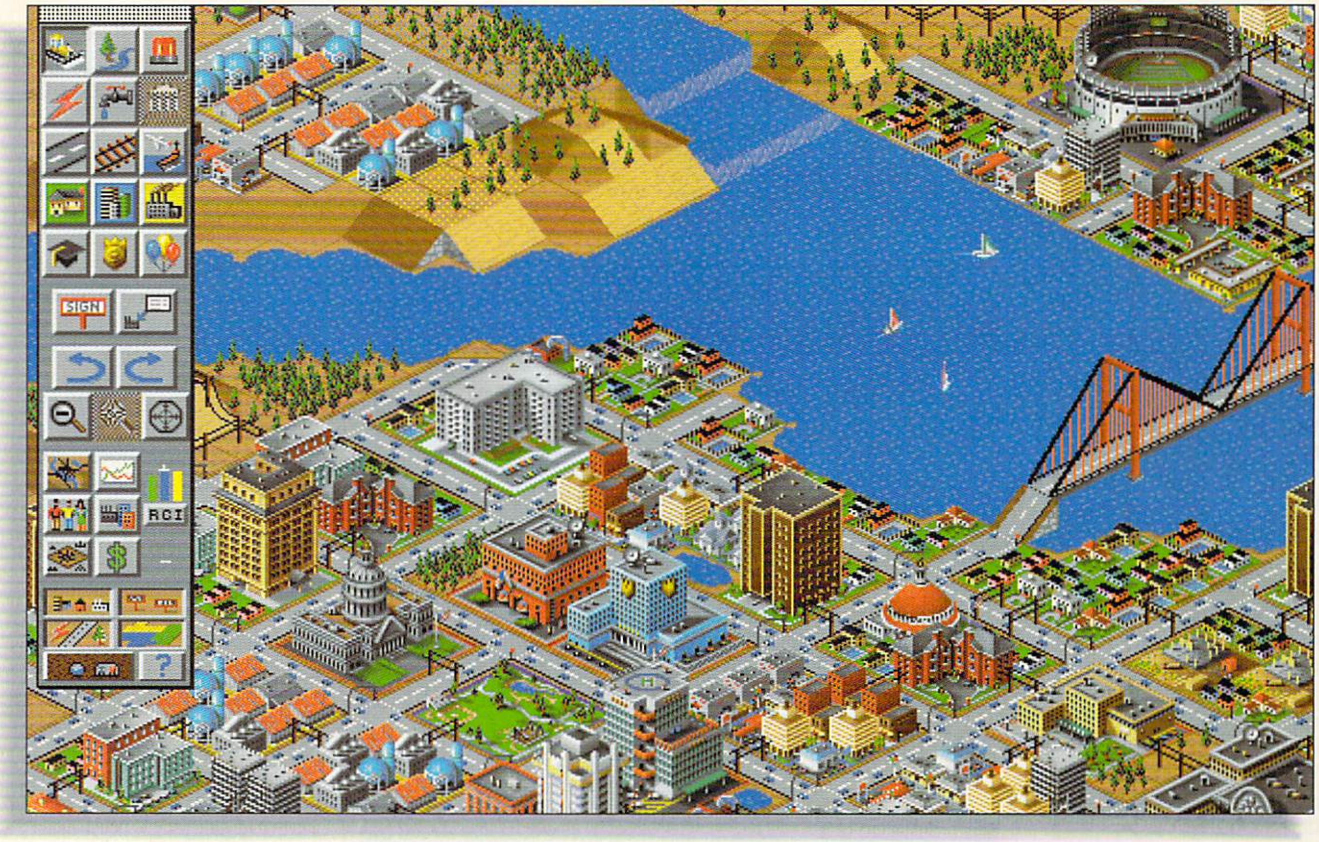
DISCOVER SPACE

The heavens have been an endless source of fascination throughout human history. But the hard science that underlies our understanding of the cosmos is often daunting. Many of the concepts of astronomy are more easily understood if learned visually—a task for which computers are perfectly suited. Brøderbund's Discover Space lets your computer show you the sun, moon, planets, and stars, as well as the ships we've used to explore them. Its text and many pictures, illustrations, and animations put astronomical concepts into context and explain them with abundant use of comparison and analogy.

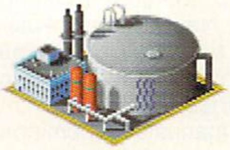
But what sets Discover Space apart from so many educational programs is its usefulness even after you've seen all its images and animations. The program's Skyline feature can plot 7000 stars, 110 deep space objects, 90 constellations, and the nine planets, all positioned as they would be seen from any point on earth. Not only that, but the plot can be made at any time, on any day in the past, present, or future. Discover Space can animate the stars to show how they appear to travel across the heavens and print a time- and location-specific star map, so you'll know exactly where to find what you're looking for in the night sky.

Discover Space can also show you the phase of the moon for virtually any date, trace the path of 33 past and future solar eclipses, and calculate the damage caused by an asteroid striking the Earth. You determine the asteroid's size and velocity, and the program will superimpose the resulting crater over one of several U.S. sites to give you an idea of the destruction such a catastrophe would cause.

You can run Discover Space in VGA or 256-color SVGA mode, but the latter requires a VESA driver. Running in SVGA not only gives



Now Entering SimCity 2000™



More SimCity flavor—less salt. The desalinization plant pumps fresh water into pipes you lay in the new underground level.

Beneath the polished facade lies a seething cauldron of angry taxpayers, broken water mains and other challenges that will take you uptown, downtown, even underground. Now entering SimCity 2000—the ultimate city simulator.

This long-awaited follow-up to our software landmark, SimCity,® makes simulated real estate, in a word, realer. In it, you get multiple viewing angles. You get to import your old SimCities. You get to terraform your landscape. You get total control of a subterranean web of water pipes and subways. And you get it all in gripping, eye-imploding 3-D.

New City Times
Groundwork Laid for New City
Plane Crashes in Alexandria
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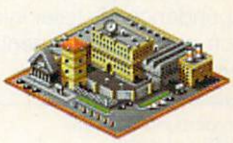
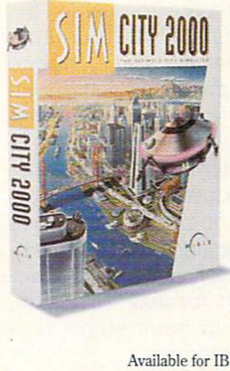
Stop the presses! 2000 comes complete with a daily paper that may have you wanting to repeal the first amendment.



Take a byte out of crime. Build SimPrisons—along with SimHospitals, SimSchools and other city SimServices.

So pack up those old programs and move to SimCity 2000. Everything that started the SimCity revolution. In a vivid new evolution.



The Ultimate City Simulator.

MAXIS

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Circle Reader Service Number 158

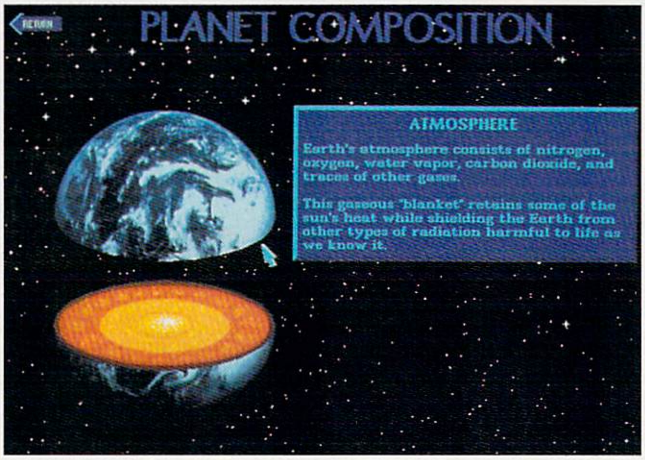
better color representation but also allows for more and better animation. Although some animations were noticeably faster on a 486, Discover Space ran well on a 33-MHz 386DX machine with 4MB of memory. Running in SVGA slowed operation slightly, but the loss of speed was well worth the gain in image quality.

While sound isn't essential, the program supports several popular sound cards, and the music and background noises make it considerably more impressive. Viewing skylines in SVGA mode with outdoor sounds is almost like looking out an open window.

Neither the program's operation nor its content is difficult to grasp, yet it's by no means just a children's program. Whether you're interested in astronomy, space travel, or science fiction or just like looking at the stars, Discover Space offers an abundance of stellar information and entertainment.

PHILLIP MORGAN

Brøderbund Software
(800) 521-6263
(415) 382-4400
$50–$60 suggested price range
Circle Reader Service Number 436



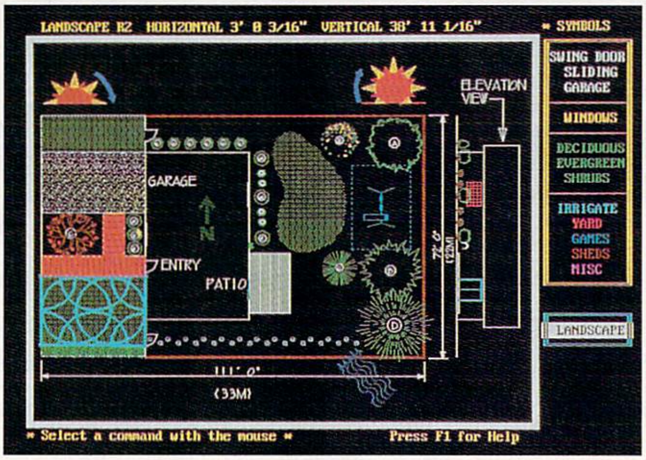
PLANET COMPOSITION

ATMOSPHERE

Earth's atmosphere consists of nitrogen, oxygen, water vapor, carbon dioxide, and traces of other gases.

This gaseous "blanket" retains some of the sun's heat while shielding the Earth from other types of radiation harmful to life as we know it.

Brøderbund's Discover Space uses animation and SVGA graphics to teach about astronomy and the planets.



LANDSCAPE R2 HORIZONTAL 3' 8 3/16" VERTICAL 38' 11 1/16"

* Select a command with the mouse *

Press F1 for Help

Autodesk's Home Series lets you design or modify elements of your home using specialized CADD programs.

THE HOME SERIES, RELEASE 2

T-squares and architect's scales begone! Autodesk's The Home Series, Release 2, lets you create architectural drawings on your home computer, view them in 3-D, and quickly and easily make as many changes as you like.

The series consists of four programs: Home, Kitchen & Bath, Deck, and Landscape. They're stripped-down versions of Autodesk's Generic CADD 6.0 and use built-in macros to eliminate much of the full program's complexity. The programs use the same basic interface, but each includes special commands and symbols. Kitchen & Bath, for example, has a much wider variety of cabinet and appliance symbols than does Home.

The programs also differ in how their output can be used. Deck is probably the most useful for true do-it-yourselfers who intend to handle everything from designing to building. While all of the programs render very accurate plan and elevation drawings, Deck produces more detailed drawings and allows you to selectively view and print their layers. The other three programs seem best suited for drawing basic spatial plans, which professionals can import directly into their high-end CADD (Computer Aided Drafting and Design) applications and use to develop complete sets of drawings and specifications.

Even as only initial planning tools, The Home Series programs can be tremendously useful. They scale your drawings for you, so miscalculations won't throw off your plans (unless, of course, you use incorrect measurements). The many symbols included in the series are automatically scaled to your drawings when you place them. It's much easier to get a sense of proportion if you can look at a drawing of a house full of furniture and fixtures or a kitchen complete with cabinets and appliances.

The Home Series won't make you an architect. A basic knowledge of home design and familiarity with architectural drafting is necessary. The programs' documentation repeatedly warns that you need to consult architects, builders, and inspectors to be sure your designs are safe, workable, and up to local building codes. Nevertheless, Autodesk tries to give you enough basic information to get started.

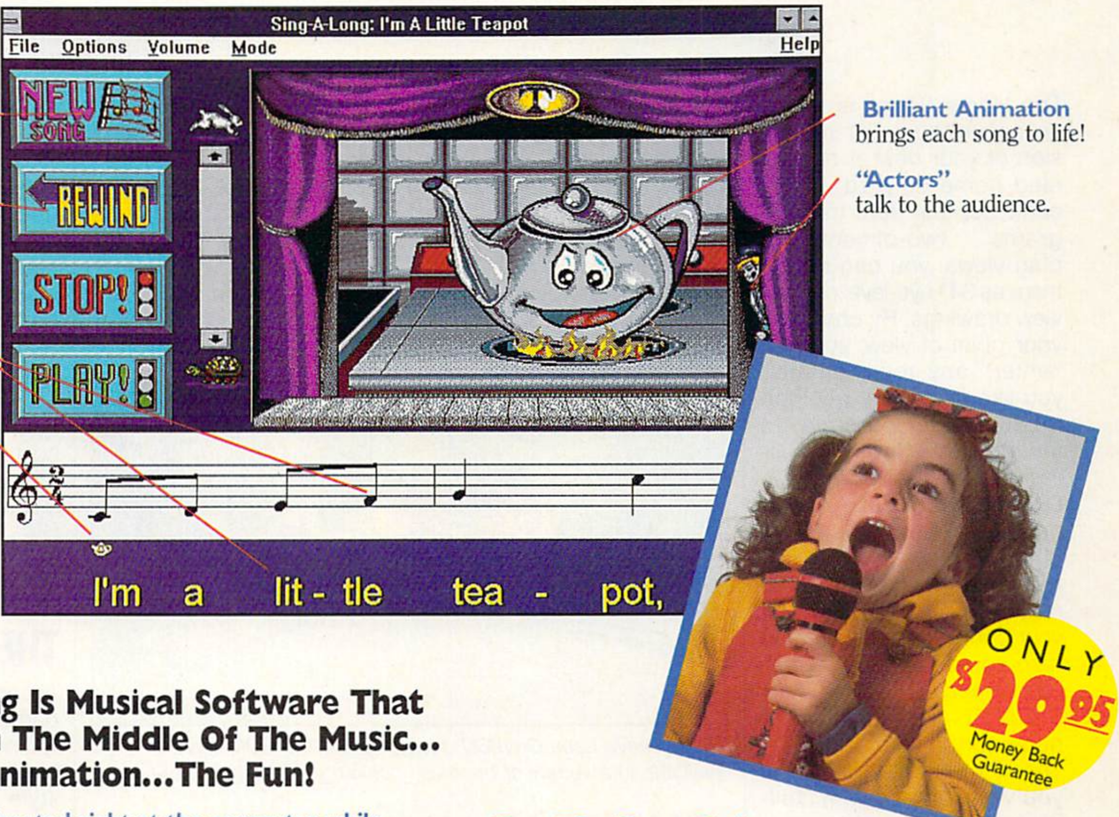
The manuals list common building materials and standard dimensions and offer advice on functionality and aesthetics. Landscape's instructions discuss balance, order, unity, proportion, variety, and seclusion as considerations in creating your backyard environment.

If you have much drafting experience, you'll notice that the programs don't strictly follow architectural conventions. If, for example, you're using interior measurements in your drawing but your architect or builder assumes you've specified conventional exterior dimensions accounting for wall thickness, you could have some serious problems.

The best reason for using

Bring Home The Magic Of Children's Musical Theatre™ With Dr. T's Sing-A-Long!

Ages 3 to 10



I'm a lit - tle tea - pot,

"Click" to repeat songs and turn lyrics on and off.

Large, Colorful Buttons give the smallest hands big control over the music.

Lyrics & Notes scroll to the music.

Dancing Icon helps the singer follow along and read the words and music!

Brilliant Animation brings each song to life!

"Actors" talk to the audience.

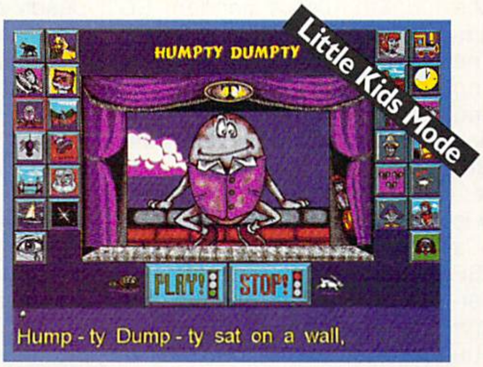
Dr. T's Sing-A-Long Is Musical Software That Puts Your Child In The Middle Of The Music... The Lyrics...The Animation...The Fun!

The songs and lyrics are directed right at the computer while your child sings along to over 25 Classic Children's songs. Each one is an engaging story with its own actors and animation.

Itsy Bitsy Spider, Old MacDonald, Yankee Doodle, Mary and her Little Lamb, and all the other characters provide hours of entertainment while involving your child with basic learning skills.

Parents and educators agree — Dr. T's Sing-A-Long is the innovative way to teach reading words and music. Lyrics scroll in time with the music so learning is fun. You can print the music and lyrics on virtually any printer.

Dr. T's Sing-A-Long grows with your child. Start your small one in *Little Kids Mode*. The simplified interface develops singing, reading, and mouse skills, while it protects Windows from a child's curiosity. As abilities progress, use *Normal Mode*.



Hump - ty Dump - ty sat on a wall,

Included

Simple instructions for adding a microphone to record performances. Any grandparent would treasure a recording! Software supports all popular sound cards and CD ROM drives.

Full-color Dr. T's Sing-A-Long Song Book. The songs, with words and sheet music, are beautifully illustrated with animated screen characters.

Dr. T's Sing-A-Long
Make It Your Child's First Software...
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COM194

The Home Series is to get an accurate spatial impression of your new or remodeled home or yard. If you can't get that from the programs' two-dimensional plan views, you can render them as 3-D eye-level or overview drawings. By changing your point of view, you can "enter" any room or area you like using the 3-D Plan module. It's possible to move around the room using the eye-level view, but 3-D Plan is a memory- and processor-intensive subprogram and may run quite slowly on some systems. You may also have to play with your configuration and eliminate some TSRs to get it to run properly.

CADD experience isn't necessary to effectively use The Home Series. In fact, if you've worked with full-blown CADD programs, you'll probably be frustrated by limitations built into these four programs for the sake of easy use. Still, you should plan to spend some time with the manuals; their tutorials are quite helpful. It'll probably take you longer than Autodesk's estimated 30 minutes to figure out a Home Series program, but once you do, it won't take half that long to decide you never want to go back to the drawing board.

PHILLIP MORGAN

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OMNICD

Why are CD-ROM discs so great? They hold tons of data. Why are they so bad? They're s...l...o...w. And I mean *really* slow. The average CD-ROM drive has an access time of 350 ms while the average IDE hard disk has an access time of about 15 ms. When it comes to throughput, the average CD-ROM drive moves data at about 150K per second, while most modern hard disks pump info at 1MB or more per second.

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The Creative Labs OmniCD double-speed CD-ROM drive is available in a variety of bundles, including one with PhotoStyler.

How do you make a CD-ROM drive faster? The best way is to double its speed, and that's just what Creative Labs has done with the OmniCD. Instead of moving data at the 150K rate of single-speed drives, it double-times data at 300K per second. The OmniCD isn't the only double-speed drive available, but it's one of the least expensive. And it's completely compatible with The Multimedia PC Marketing Council's recently released Level 2 Specification, which calls for a 16-bit sound card and a double-speed drive.

Installing the OmniCD is painless. If you have a Sound Blaster Pro or ASP 16, the CD interface is already built into your sound card. So you just plug the drive's control and audio cables into the card, plug a power connector into the drive, and install the CD drivers, and you're in business.

If you have another brand of sound card or no sound card, the OmniCD comes with its own dedicated interface card. It's worth mentioning that Creative Lab's CD uses a proprietary interface rather than the industry-standard SCSI.

There are several goodies packaged with the OmniCD. First, the drive is Photo CD compatible. Included in the package is a special version of Aldus PhotoStyler, one of the best bitmap graphics editors around. You'll also find several utilities, including CD Player, which makes playing audio CDs easy.

After installing the OmniCD, the first thing you're likely to notice is that it doesn't use a standard CD caddy. Caddies are a pain, and I'm glad that the OmniCD and several other second-generation CD drives are opting for the caddyless design.

"All this is great," I hear you say, "but how fast is it?" Well, as you'd expect, it's about twice as fast as a regular drive but feels even faster. The difference between using the OmniCD and a single-speed drive is dramatic. With the OmniCD, images snap onto the screen, full-motion video sequences are suddenly fluid, and searches are quicker. Everything is easier and more enjoyable.

After using the OmniCD for about a month, I can't find a single thing to complain about. In fact, the only negative is that it doesn't use a SCSI interface. But even that's something of a virtue, because its proprietary interface makes it compatible with the zillions of Sound Blaster Pro and ASP cards already out there. At $299, this is a deal that's hard to beat.

CLIFTON KARNES

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$299

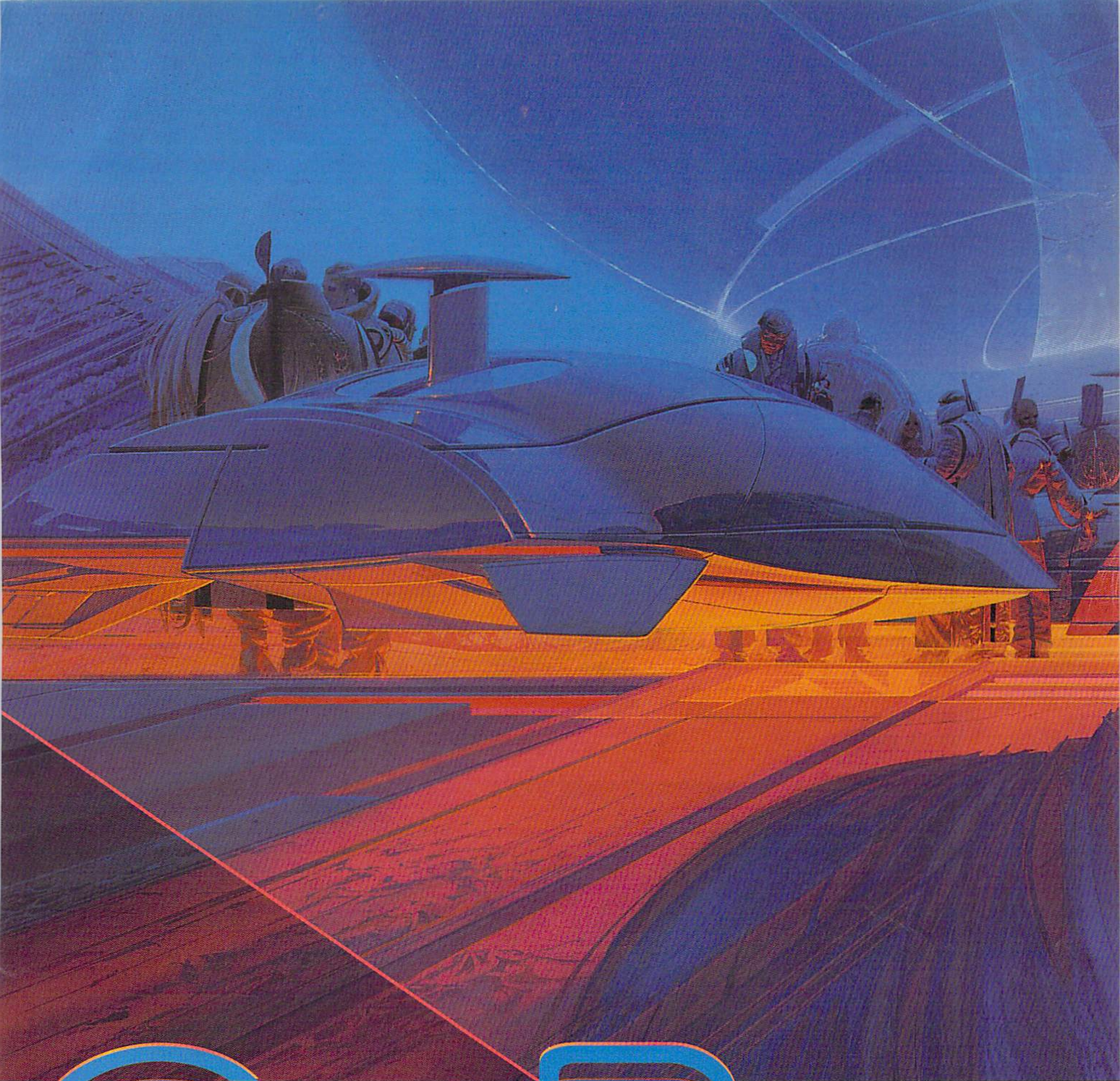
Circle Reader Service Number 438

THE LOST VIKINGS

Arcade fans suffering from game-console envy can finally find relief in The Lost Vikings, a superb platform-style action game that survives the voyage to the PC completely intact.

You control a trio of bickering Viking warriors, displaced in time and space by an evil alien zookeeper. Your goal is to guide them home, through 37 levels of increasingly weird worlds, blocked by puzzles and deadly adversaries. Each Viking has his own unique ability to jump, attack, or defend. Because you can control only one Viking at a time, success requires switching between characters, combining their strengths to survive.

Gameplay, while not terribly original, is instantly engaging and constantly challenging. Background graphics are colorful and varied, highlighted by expressive character animation and huge multiscreen playfields. The trio's subtle comic interplay also adds delightful personality to the action. Controls are equally responsive for keyboard or joystick,



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with excellent support for the four-button Gravis PC Gamepad controller.

The best compliments paid to The Lost Vikings are that it looks as good and plays as well as the Amiga and SuperNintendo versions. That's high praise indeed and an encouraging sign for the future of arcade games on the PC.

SCOTT A. MAY

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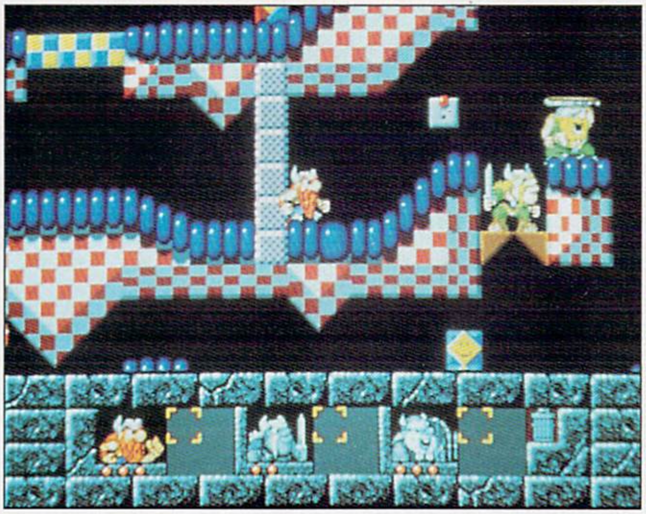

If you're looking for a Nintendo-esque platform game for your PC, Interplay's The Lost Vikings fits the bill.

READY, AIM, FILE!

Ready, Aim, FILE! 2.5b is a Windows file and program manager that allows you to use 256-character filenames. With its system of file cabinets and folders, you can organize files by subject rather than by disk directory structure. You have six cabinets, and within each cabinet you may have as many folders as you wish, but you may view only three at a time.

RAF displays onscreen buttons for performing common operations you would otherwise do in Program Manager and File Manager—launching programs, moving, copying, deleting, searching, and so forth. RAF can't actually replace Program Manager as a shell; instead, it runs on top of it.

While RAF allows 256-character filenames, it still must create its own DOS names (like 307277.DOC). The manual warns against using DOS or Windows to change these filenames, since the program could get confused (and so could you). A smarter program would protect you from accidentally or illegally changing these filenames outside the program. If you use RAF at all, you probably should use it whenever you're using Windows.

Within Windows applications, Open, Save As, and Import can use the long filenames. RAF is preset to intercept these commands with over a dozen programs. However, in my experience, Open didn't always work properly with Word for Windows, one of the preset programs. You must do some setup to make the intercept feature work with other Windows programs, and this isn't a task for novices.

RAF has some nice ideas, like Version Control (which lets you track changes in a file by saving without replacing). But it's rough

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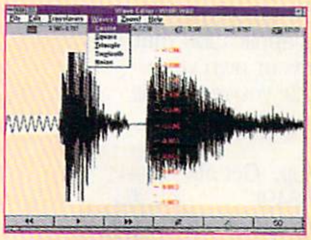
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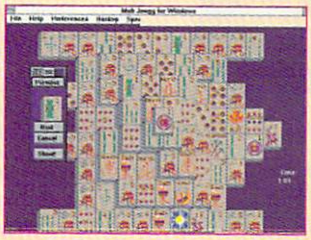
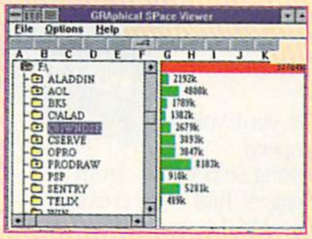

Mah Jongg for Windows

MAH JONGG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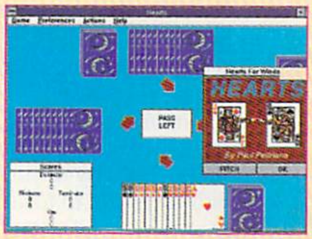
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REVIEWS

around the edges and weak in areas: incomplete screen redraws, help text wider than its window, and a file viewer that displays only text files.

To its credit, RAF has an uninstall feature. Unfortunately, it doesn't go through your 256-character filenames prompting you to rename them to DOS names, so if you don't rename them before uninstalling, you're left with the strange, indecipherable filenames.

While RAF seems to be aimed at novices, inexperienced users are likely to get in trouble with it. VSoft offers a 30-day money-back guarantee, so you might want to give it a try and see if it fits your needs.

J. BLAKE LAMBERT

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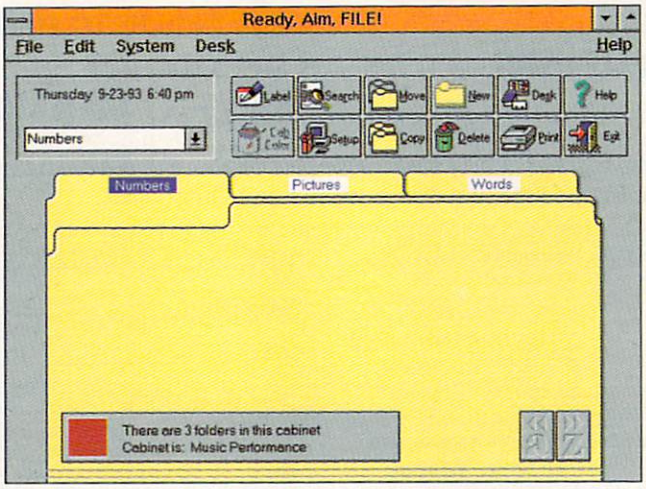

There are 3 folders in this cabinet
Cabinet is: Music Performance

Ready, Aim, File! replaces long lists of obscure DOS filenames with folders and 256-character filenames.

AMERICANS IN SPACE

If you're a manned space flight enthusiast, Americans in Space is a must-have package for your multimedia PC. This comprehensive CD-ROM stylishly chronicles the U.S. manned space program from its beginnings to the present day space shuttle and the upcoming space station. Watching and listening to a riveting blend of still pictures, animation, and narration, you can either follow the progress of America's manned space projects across the historical time line or zoom directly in on a particular subject of interest.

Upon launching the software, you have three options. Beginners can consult the Pilot's Manual for usage information. Once you've been briefed on piloting the program, you can travel to Mission Control for access to over 500 photographs and over an hour of video and narration. Finally, the Express Tours selection offers overviews entitled The Race to the Moon, Turning Points, Disasters, Living in Space, and Cruising the Planet.

The Americans in Space user interface makes navigation a breeze. In both Express Tours and Mission Control, you choose options from a simulated control panel using the mouse.

There are eight selections in Mission Control: Prologue, Mercury, Gemini, Apollo, Skylab, Apollo-Soyuz, Space Shuttle, and Space Station. If you click on Apollo-Soyuz, you're given only one selection, since the program had only a single mis-

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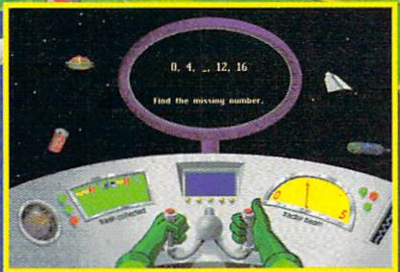
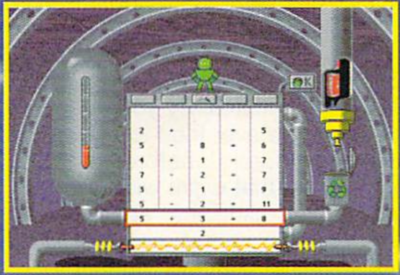
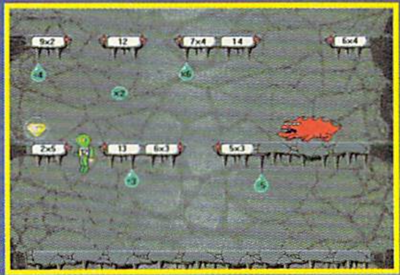


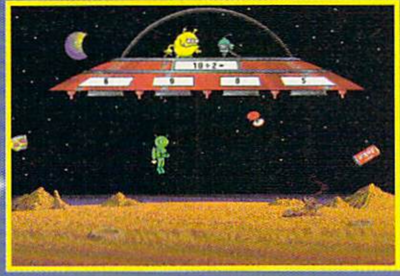
Oh no! The Trash Alien has captured Spot and left behind a trail of litter. In Trash Zapper, your mental math skills are needed to help clean up the mess.



The *Number Recycler* can convert trash into fuel but Blasternaut needs your problem-solving abilities to make it work. Recycle all the trash and you're ready to go!

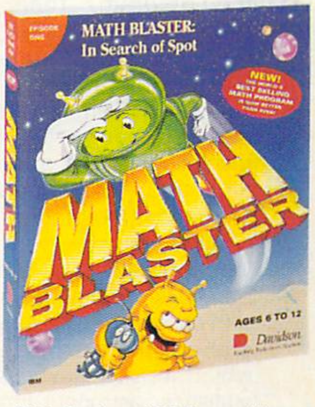


You've tracked the Trash Alien to his home planet. But you haven't saved Spot yet! Use your mental math skills to help Blasternaut calculate his way through the *Cave Runner* game.



Finally, Blasternaut and the Trash Alien are face to face in the *Math Blaster* game. It's a battle of the numbers and Spot's fate is in your hands—good luck!

Math Blaster:® In Search of Spot *launches the world's best-selling math program to a whole new level of learning and fun! Kids will join Blasternaut on an all-new action-packed adventure to rescue his robot pal Spot. As they search the universe, they'll boost their mental math and problem-solving skills into the stratosphere!*



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sion. But if you choose Gemini, you're then able to select from any of the ten Gemini missions, as well as from a project overview. The overview summarizes the purpose and history of the selected program and can be printed for future reference. You can choose to watch a slide show or movie about the program. There are three Gemini movies: The Gemini Launch Sequence, Gemini-Agena Rendezvous Test, and Gemini Reentry and Splashdown. The high-resolution images are beautiful and finely detailed throughout the program.

When you select an individual mission, the mission patch is displayed along with descriptive text, and several options are presented which let you view mission statistics, astronaut profiles, or a slide show of the mission. All relevant facts such as mission dates are presented on the control panel.

The Express Tours selection presents narrated slideshow histories of various aspects of the space program. You can view a full-screen slide show, but there's no provision to stop and start the show when using this option. With the simple slide show, you view smaller pictures on the control panel at your own pace, and you can blow up pictures you're particularly interested in to full-screen size.

The Americans in Space package includes versions for both MPCs and Macintoshes. With over an hour of full-motion video, more than 500 images, and narration to accompany it all, this is a fascinating multimedia presentation. We can highly recommend this wonderful space program.

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FREDDY PHARKAS, FRONTIER PHARMACIST

If you drop everything to catch *Blazing Saddles* on the late show—for the 10th or 12th time—then Freddy Pharkas, Frontier Pharmacist is the game for you. Al Lowe, creator of the megahit Leisure Suit Larry series, straps on his spurs to give the Wild West a sharp and painfully funny poke in the ribs. Depending on your tastes and social sensibilities, this could be one of Sierra On-Line's most enjoyable graphic adventures yet.

Like Mel Brooks's classic western parody, Lowe's creation allows no saddlesore stereotypes to go unscathed. True to form, Lowe also manages to slap, tickle, and goose just about every ethnic, religious, and sexual persuasion on both sides of the Rockies. Although not as entirely adult themed as the Leisure Suit Larry games, there are many innuendos that may make you cringe applied to both man and beast. Authentic western outhouse humor also plays a role, showcasing Lowe's perennial sixth-grade disposition. It's all in great fun, and a solid new direction for this talented comedy writer.

The game gets off to a hilarious start with the singalong "Ballad of Freddy Pharkas," describing how our hero gave up a career as a gunslinger for his first true love: pharmacy. Freddy sets up shop in a friendly, but very weird, gold-rush town, where he catches wind of a plot to destroy the tiny mudhole. To save the day, you must solve a sequence of puzzles involving everything from stampedes (of snails, no less) to outbreaks of terminal flatulence. Most solutions are object-oriented, merely requiring you to collect and combine various graphic elements. The fun isn't just in solving the puzzles but in jumping through increasingly outrageous hoops along the way.

The game's best challenges unfold in Freddy's backroom laboratory. Armed with the superbly written *Modern-Day Book of Health and Hygiene*, you must diagnose various maladies and correctly mix the prescribed remedy. It's a fun break from the action, and by happy coincidence, it also doubles as the game's copy protection. Other diversions include realtime gun duels, sly card sharks, cantankerous tinhorns, and a borderline-tasteless interlude with a sheep. What little free time you do have is spent courting the shy, lovely schoolmarm.

Fashioned with Sierra's new graphic interface, gameplay flows smoothly. You navigate the game with a series of western-related icons: cowboy boots (walk), wire-rimmed spectacles (look), a gloved hand (touch—or grope, as the case may be), and a saddlebag (inventory). Graphics are good, rendered with suitable cowpoke panache, slightly hampered by the use of low-resolution VGA. Ambient sound effects help accent the humor, but it would be nice to see (and hear) an all-talkie CD-ROM version.

Are you tired and run-down from the usual graphic adventures? Slinging sight gags and one-liners, Freddy Pharkas, Frontier Pharmacist delivers the cure for what ails you.

SCOTT A. MAY

Sierra On-Line
(800) 326-6654
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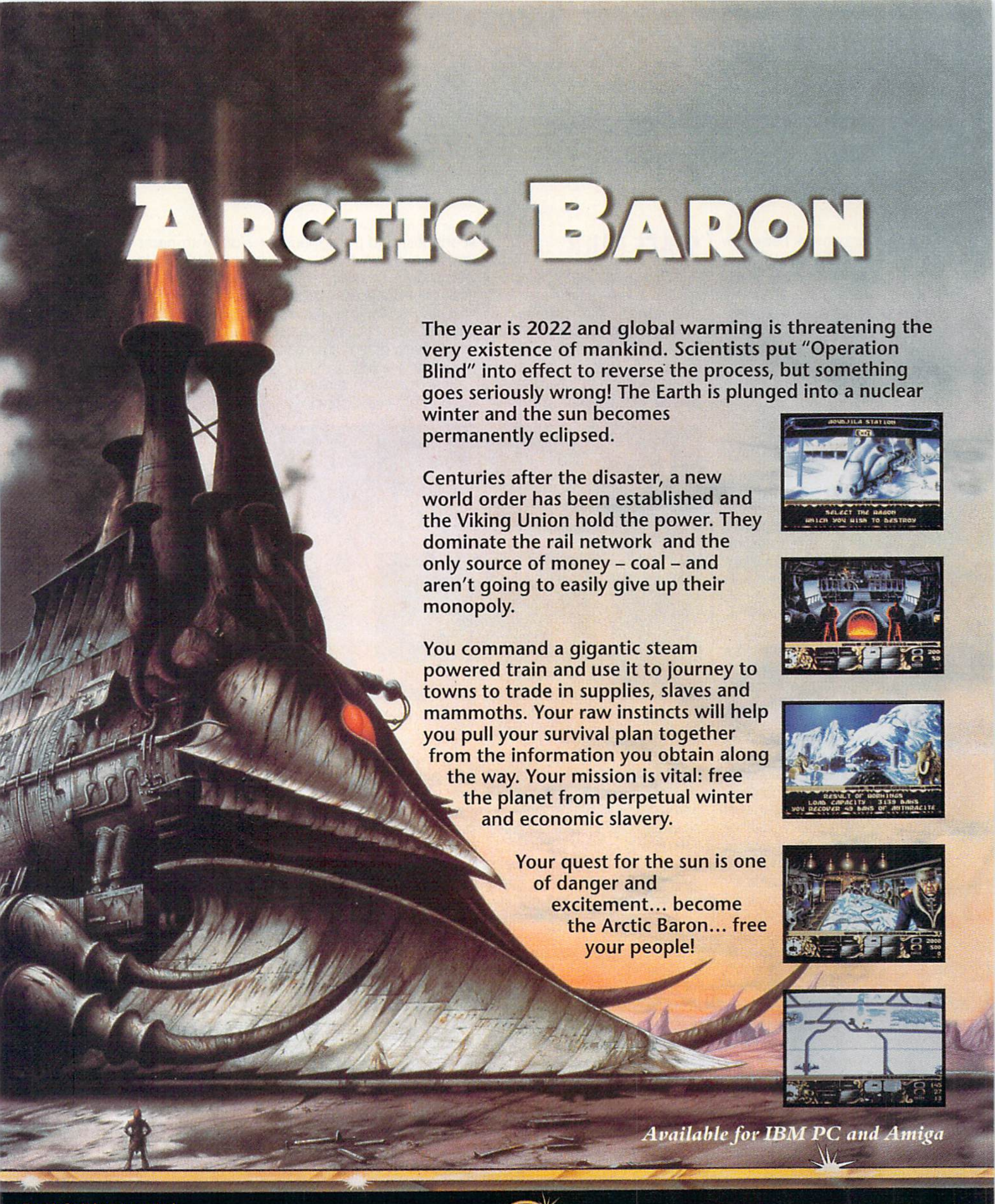
COACTIVE CONNECTORS

The Coactive Connector box promises that the network device is "so easy, you can install each computer in five minutes. By yourself." If you've ever tried to network computers before, you'll greet that claim with skepticism. But it's absolutely true.

The Coactive Connector for DOS and the Coactive Connector for Windows are networking products for small offices. Any combination of up to 32 DOS and Windows personal computers is possible. There is also a Coactive Connector for Macintosh which ties Macintosh computers and Apple LaserWriter printers into your DOS/Windows network—a handy way to get inexpensive cross-platform connectivity.

Physically, the Coactive Connectors for DOS and Windows are small units that plug into the parallel ports of your computers. The port can still host a printer. The advantages of the Coactive Connectors are ease of installation, simple setup and administration of the network, and low cost per computer networked. *Low cost* translates to $149.95 per DOS computer and $29.95 per Mac added to the network.

We extensively tested a three-computer Coactive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EXIT
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WHICH YOU WISH TO DESTROY
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RESULT OF WORKINGS
LOAD CAPACITY : 3139 BAHS
YOU RECOVER 49 BAHS OF ANTHRACITE
2000
500

ARCTIC BARON

The year is 2022 and global warming is threatening the very existence of mankind. Scientists put "Operation Blind" into effect to reverse the process, but something goes seriously wrong! The Earth is plunged into a nuclear winter and the sun becomes permanently eclipsed.

Centuries after the disaster, a new world order has been established and the Viking Union hold the power. They dominate the rail network and the only source of money – coal – and aren't going to easily give up their monopoly.

You command a gigantic steam powered train and use it to journey to towns to trade in supplies, slaves and mammoths. Your raw instincts will help you pull your survival plan together from the information you obtain along the way. Your mission is vital: free the planet from perpetual winter and economic slavery.

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Silmarils

READYSOFT

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Connector network here, running two machines with Windows and one machine using just MS-DOS. The only difference between the Coactive Connector for DOS and Coactive Connector for Windows is the software.

Installation is easy. The manuals, entitled How to Hook This Stuff Up, are full of clear drawings showing step-by-step hookup. We transferred files from machine to machine, printed files from all computers on the network using a printer attached to just one computer, and ran programs installed on one computer from all the others on the network. No problems were encountered.

The Coactive Connectors are an excellent selection for a small office's first network. Larger networks cost hundreds of dollars more and require technicians to install. Some also need an additional computer to act as a file server, which is a computer dedicated to storage of programs and files available to everyone on the network. The Coactive Connectors eliminate the file server by sharing the resources of your present computers.

The major disadvantage is relatively slow speed. This is true of any peer-to-peer network which is sharing resources instead of using a separate file server. If your network usage calls for many users transferring vast amounts of data, go to a full-fledged, Novell-type network. Otherwise, the Coactive Connectors will have you networking literally in minutes.

RALPH ROBERTS

Coactive Computing
(415) 802-1080
$149.95

Circle Reader Service Number 443

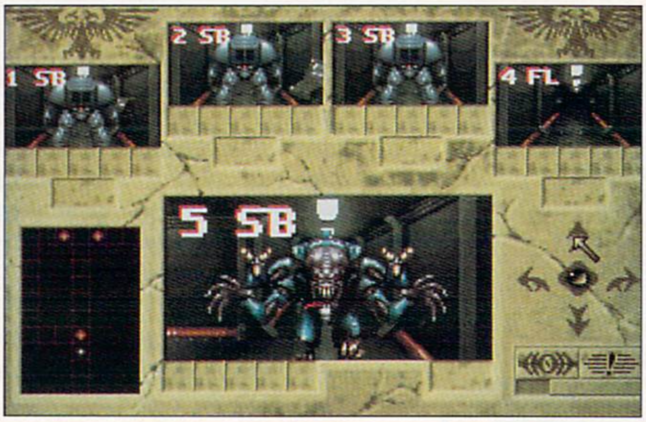
SPACE HULK

The Space Marines are looking for a few good men. So are the Genestealers, though admittedly not for the same purpose. Welcome to the dark, feral world of Space Hulk, a fast-paced, ultraviolent adaptation of the Games Workshop's popular tabletop game. Fans of the movie *Alien* will quickly identify the action as a bug-hunt supreme, playing space tag against the deadliest of prey. The winners move on to greater glory; losers decorate the walls with red.

The manual sets up the savage story line about a race of superbeings bent on universal domination. Hidden in huge, abandoned ships known as Space Hulks, the Genestealers spread their mutated seed throughout the galaxies. Summoned by the Emperor, you play an Imperial Captain, charged with leading squads of elite Terminators on ship-to-ship missions to "cleanse and burn."

There's plenty here to keep you busy: five basic and nine advanced tutorials, 16 single and multisquad scenarios, and the exhausting 22-mission Deathwing Campaign. Mission objectives vary but usually require securing specific areas; retrieving artifacts; and, most importantly, getting them before they get you.

Your role is to direct the action from two distinct vantage points: first-person tactical and top-down strategic views. The first offers the standard 3-D look down dark, uninviting corridors of doom. You control one marine at a time but supervise or switch control between nine others via small closed-circuit monitors. Realistic lighting effects limit your forward vision, forcing you to rely on sometimes unreliable local-area scanners. Your best clues are often based on sounds: creaks and rattles, hissing steam, low throaty growls, and distant screams, all crisply digitized for maximum goosebump quotient. Sometimes you see the attacks coming, while often these fleet, multiclawed creatures seem to jump right out of the bulkhead and into your face. As expected, you have outrageous short- and long-range weaponry at your side, with names like Lightning Claws, Heavy Flamer, and Storm Bolter. Victims explode with a sickly satisfying belch of blood and body parts that don't magically disappear but pile up like last week's garbage. It's demented, to be sure, yet irresistibly exhilarating when the action erupts in nonstop, heart-pounding carnage.



Electronic Arts' Space Hulk is an ultraviolent blast-fest that's reminiscent of the action in the Alien *films.*

The realtime strategic planning screen offers an overall view of each mission. Here you can program movement and firing commands for each Terminator in your assigned squads. This multitasking feature is not only a tremendous boon to your mission success but also cranks up the intensity several notches. The Freeze Time tool momentarily suspends the action, allowing you to dry your palms and gather what's left of your wits.

Armed with a slick, streamlined interface and wondrously deranged special effects, Space Hulk is a bug blaster's nightmare come true.

SCOTT A. MAY

Electronic Arts
(800) 245-4525
$59.95

Circle Reader Service Number 444

ECCO Professional

ECCO Professional is a Windows Personal Information Manager (PIM) that's also a database. Happily, though, it doesn't feel like a database most of the time.

ECCO is intuitive throughout, with three basic views: PhoneBook, Calendar, and Outline. To create an appointment or action item with someone in your PhoneBook, simply drag that person's name from the PhoneBook to the Calendar or To-Do list. ECCO notes the ap-

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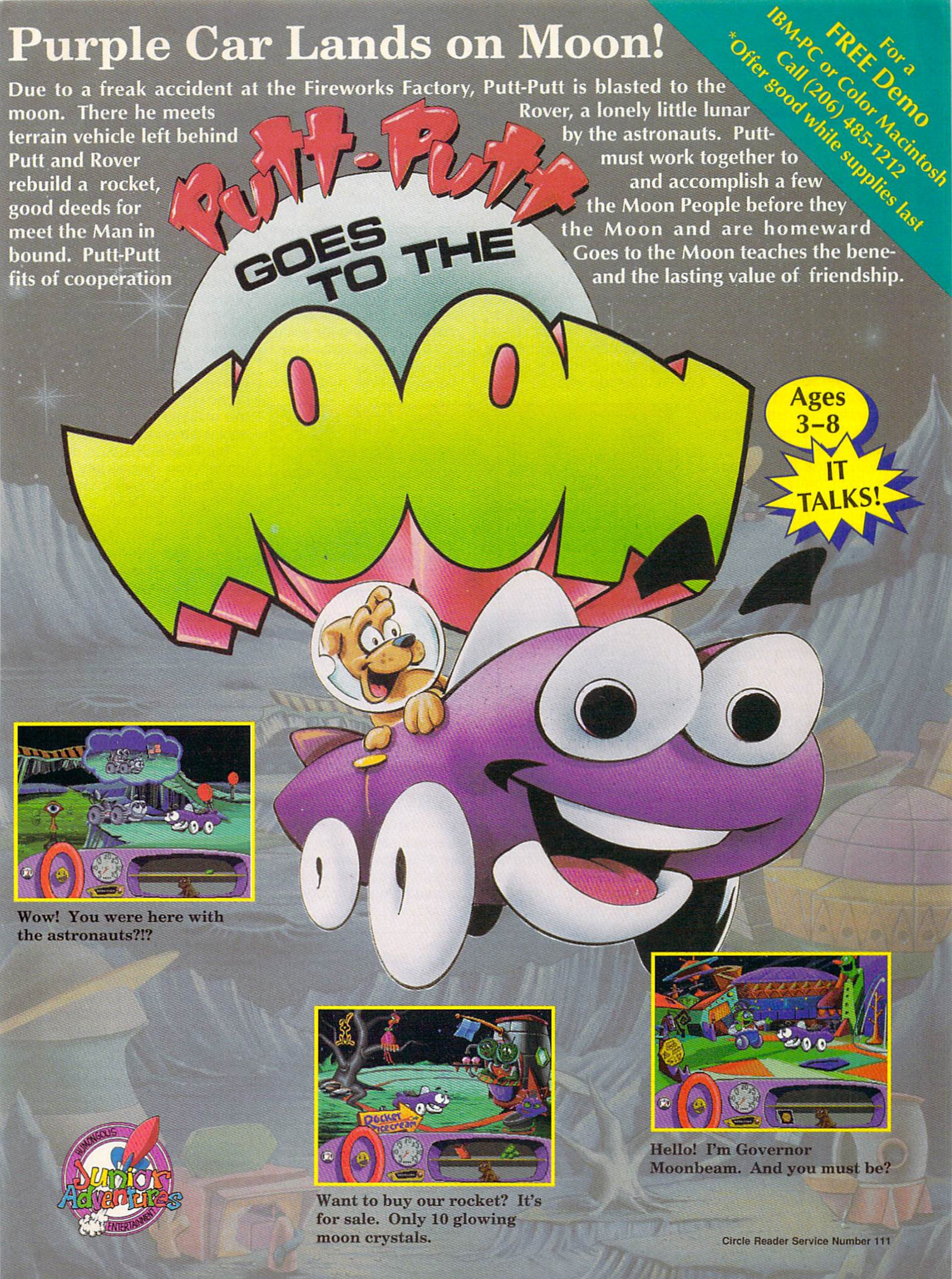
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Hello! I'm Governor Moonbeam. And you must be?

Circle Reader Service Number 111

pointment in both places, inserting a note with the phone number.

Highlight a name and click on a Dialer icon, and an autodial window pops up, a Logged Call entry appears below the name in the PhoneBook, and logging begins when you dial.

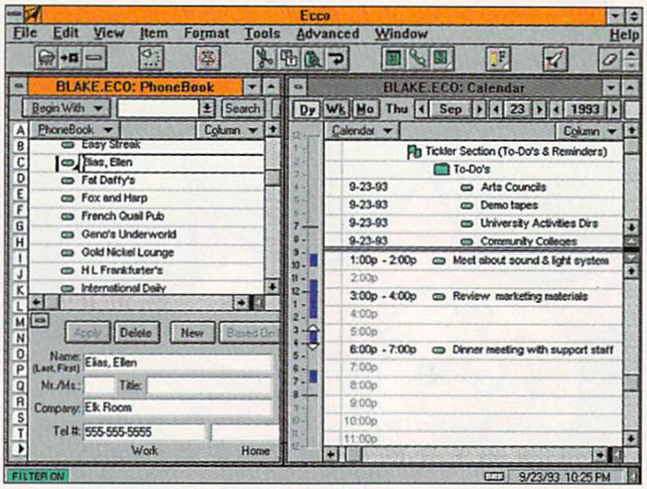
You can import either tab-separated or comma-separated values files into the PhoneBook. Just show ECCO which fields in the import file match preset ones in the ECCO file and give names to fields that don't already exist in ECCO. (Sharp Wizard and HP 95LX owners can order a free data-transfer application; others may purchase a file-conversion program that supports numerous data formats.)

You can export your information for use in a mail merge or use the ECCO Shooter, an arrow icon that sticks to the title bar of the active window. The Shooter lets you exchange data with another Windows program as if you'd used the clipboard cut-and-paste functions by selecting a program from a pop-up list. ECCO also supports object linking and embedding.

ECCO makes linking information effortless. When you drag an item (person, appointment, outline, to-do) from one view to another, a copy remains in the original location. Edit any of these copies, and the others change, too. This way you can have several methods of accessing the information later.

You can view combinations of a personal-organizer page and a spreadsheet, with a fixed column on the left and scrolling columns on the right for extra information. You can navigate quickly in the views, and you can search, sort, and filter the items. Items in any view can be text or graphics.

The Calendar View provides daily, weekly, and monthly displays and also contains the Tickler (to-do list). You can also set simple or custom alarms and create recurring events.



Easy Streak
Elias, Ellen
Fat Daffy's
Fox and Harp
French Quail Pub
Geno's Underworld
Gold Nickel Lounge
H L Frankfurter's
International Daily

Name: (Last, First) Elias, Ellen
Mr./Ms.:
Title:
Company: Elk Room
Tel #: 555-555-5555 (Work)
(Home)

Tickler Section (To-Do's & Reminders)
To-Do's
9-23-93 Arts Councils
9-23-93 Demo tapes
9-23-93 University Activities Dirs
9-23-93 Community Colleges

1:00p - 2:00p Meet about sound & light system
2:00p
3:00p - 4:00p Review marketing materials
4:00p
5:00p
6:00p - 7:00p Dinner meeting with support staff
7:00p
8:00p
9:00p
10:00p
11:00p

9/23/93 10:25 PM

ECCO Professional combines the best features of PIMs and outline processors; a "lite" version is now available as well.

As with the other views, Outlines can display columns of dates, names, or other useful information. It's easy to change the color or style of all items on a particular level, and you can expand and collapse the Outline as you work.

Folders let you organize items that you want to keep together. Standard folders include the PhoneBook and Scheduling folders, but you can easily create your own. ECCO lets you drag items into a folder or drag folders into or out of outlines (to view or remove them).

ECCO includes templates to help you get started with specific uses: research, sales, legalities, and project management. It handles information and ideas well, produces nice printouts in handy organizer sizes, and has many more features than could be covered here. It takes a while to get used to some of ECCO's advanced features, but it's useful straight out of the box. If you're just looking for a simple day book, you might find Lotus Organizer or the shareware Time and Chaos a more economical choice. But ECCO's outline and database functions make it far more than a simple PIM. Arabesque is so sure you'll like it that the company provides a 60-day money-back guarantee on the program.

J. BLAKE LAMBERT

Arabesque
(206) 869-9600
$395

Circle Reader Service Number 445

GUINNESS MULTIMEDIA DISC OF RECORDS

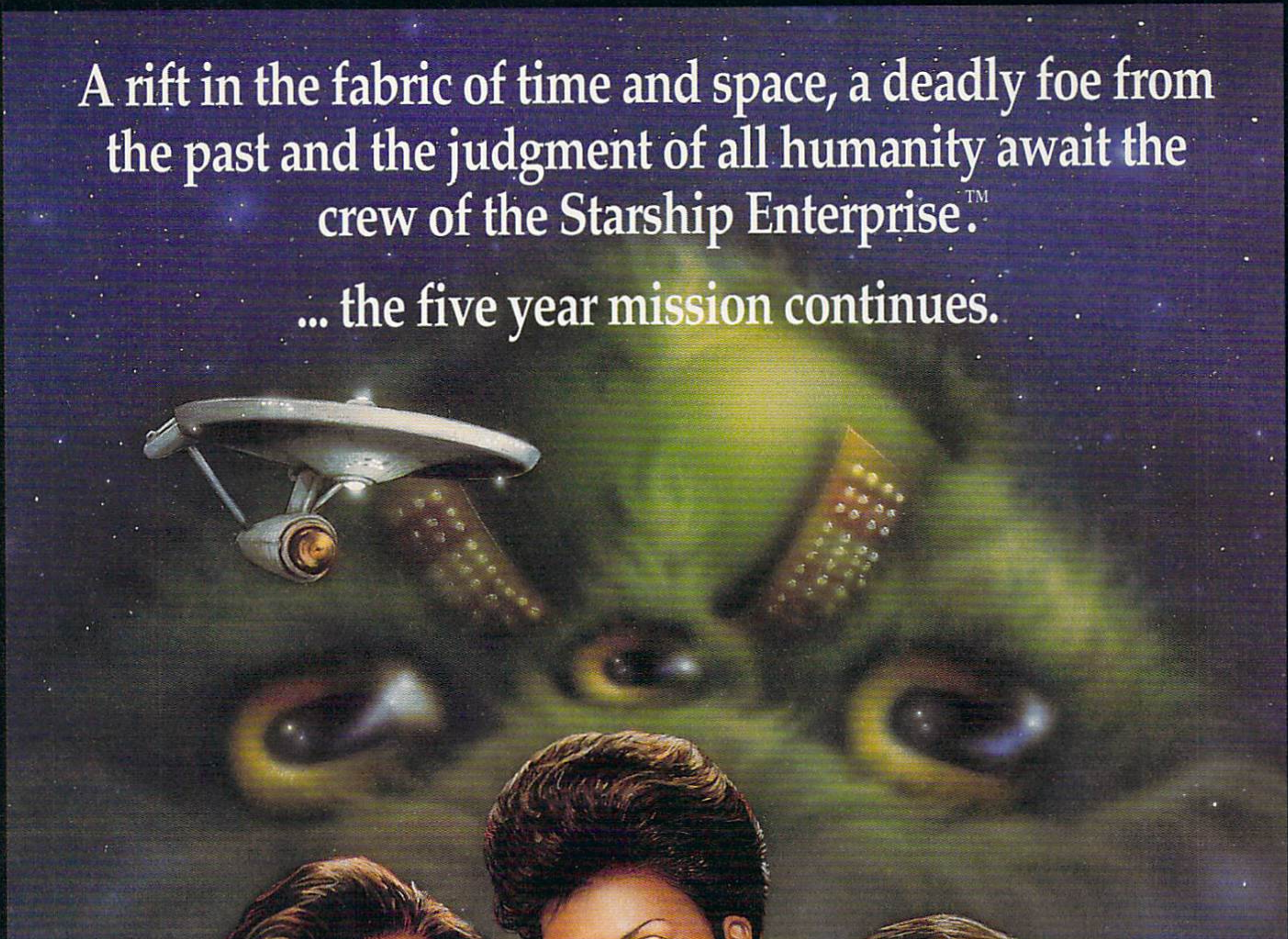
The *Guinness Book of Records,* first published in 1955, is the world's best-selling copyrighted book. Now, with flair and a solid, well-thought-out design, the Guinness Multimedia Disc of Records brings that same popular content to your multimedia PC.

Installation is easy. The drivers for the program take up about 4MB of storage on your hard drive. The program is completely menu- and button-driven, and you're given many choices on how to navigate through the masses of information contained on the disc.

The Browse Records button lets you choose any record from "Acrobatics: Longest Inverted Flight" to "Zoos: Oldest." Many of the 3621 entries are fairly detailed. There's also the traditional *Guinness* inclusion of obscure knowledge among the more common facts. For example, in the "Words" category, you'll find the longest Icelandic word, *Haecstarettarmalautningsmaour,* with 29 Icelandic letters (transliterating to 31 in English characters) and meaning "supreme court barrister."

Using the Word Search button, you can find records related to a specific subject. You can use *and, or,* and *not* operatives to narrow the search. For example, searching for *computer* brings up 30 matching records. These start with a reference to "Prehistoric Reptiles: Largest chelonians," which is listed because of a mention in the article of computed weight. In this case you could narrow the search by looking for *computer and machine.*

You can search by category using the Topic Index button, which brings up a list of 11 categories ranging from "Earth and Space" to "Sports and Games." Each of these has subcategories. "Science and Technology" provides 14 subcategories ranging from "Elements" to "Space Flight." If you choose "Elements," you're



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Circle Reader Service Number 253

given three topics: "Matter," "Subnuclear Particles," and "The 109 Elements." Each of these selections provides more information than you'd expect from a database. Under "The 109 Elements," for example, you don't simply get a periodic table, but an actual reference to such things as which elements are most common, which are the rarest, which have the highest toxicity, and so on.

Half of the fun of the paper edition is just flipping through and randomly discovering information. The Random Record Explorer button will let you do this with the disc version. There's also a Superlatives Index button, which lets you select records by superlatives such as *best, worst, oldest, youngest, windiest, hottest,* and *widest.*

Select the Picture Index button to start with the same 11 categories as the Topic Index. From here you can access the 1062 images on the CD.

The Movie Index button gives you a total of 37 movies. This index, to our dismay, had only four categories: "Animals and the Earth," "Human Beings," "Technology and Space," and "Transportation." We found that most of these didn't have sound—not even the entry for the howling monkey! We did like the fact that movies can be advanced frame by frame, forward or backward, to examine details, but we didn't like the lack of sound or the jerkiness of the animations that did have sound.

Although a help reference booklet isn't included with the packaging, there's extensive help on the CD itself. In most cases, though, you won't need it; the program is very intuitively designed. Most of the information here is trivial, but it's often educational and always a lot of fun.

BRUCE M. BOWDEN and
MARGARET A. BOWDEN

Grolier Electronic Publishing
(203) 797-3530
$99

Circle Reader Service Number 446

The NCR 3150 sports a fast 25-MHz 486SX processor, available active-matrix color, and a front-mounted trackball.

NCR 3150

Two years ago, NCR established itself as an important player in the notebook market with the Safari 3170. This year, it's introduced another major machine—the 3150 notebook.

The 3150 is sleek, light, and fast. It's powered by a 25-MHz 486SX processor, and has a 9.5-inch screen, local-bus video, PCMCIA Type 2 slot, a 1.44MB floppy drive, and external trackball. The 3150 also comes with 4MB of RAM (upgradeable to 20MB), and a removable hard disk of 80-170MB capacity. Video options include monochrome, passive-matrix color, and active-matrix color. The monochrome and passive matrix displays can be upgraded to active matrix.

The review unit I tested featured active-matrix LCD, an 80MB hard disk (too small for a machine of this caliber), and 4MB of RAM.

Looking at the outside of the 3150 you'll find a sturdy, attractive case that's dark brown with putty details. Open the case and you'll see these same colors repeated with turquoise accents on important keys. Status information is provided by small LEDs directly under the display.

The 3170's keyboard is very good for a notebook. The layout is nearly full-sized, with an inverted T for cursor keys. There are also dedicated Page Up, Page Down, Home, and End keys, all of which are a plus.

As I mentioned above, there's a trackball which you can attach to the front of the machine. When I use a trackball, I prefer it to be on the side of the computer, and I found this front position to be awkward.

If you don't want to use the trackball, however, you can configure the cursor keys to do double-duty for mouse movement. I found this arrangement to work very well in Windows, but the key combination you have to use to switch back and forth between cursor and mouse takes some getting used to.

The 3150's active matrix screen is excellent. It's one of the best color displays I've seen on a notebook. The colors are sharp and saturated, and it's a joy to use.

This machine was built to run Windows and it shows. With the 486 processor and local bus video, Windows really moves. If you're used to laptops being sluggish with Windows, you'll really be surprised with the 3150.

The 3150 can use either nickel hydride (NiMH) or nickel cadmium (NiCAD) batteries. The computer senses which type of battery is attached, and batteries can be changed while the computer is on. Power-saving features are everywhere in this machine, but battery life is still about two hours for the color model.

The cost for the 3150 varies according to the screen and hard disk options, but prices range from $1,995 for the monochrome model with a 80MB hard drive to $3,805 for an active-matrix color model with a 170MB hard drive.

The 3150 is well-designed, well-built, fast, and stylish. With a removable hard drive, PCMCIA slot, upgradeable video, it's also modular and easy to en-

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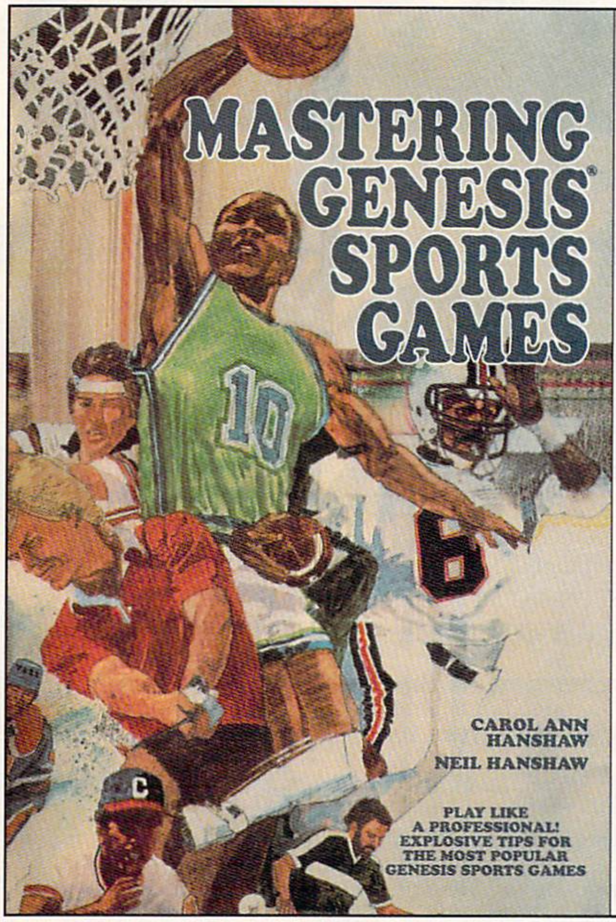
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hance. You may pay more for this machine than a mail-order clone, but it might just be worth the investment.

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Circle Reader Service Number 447

PRINCE OF PERSIA 2

Prince of Persia 2: The Shadow & the Flame will probably be called an action game by many players. Then why do I feel I've been on such a splendid adventure?

Choreographed by Jordan Mechner (who also designed the original), this sequel has everything that Prince of Persia offers and much more. At its heart, it's the same basic game: traditional sword fighting, taking baby steps up to ledges and giant leaps of faith beyond them, trap-evading, abyss-width estimating, ledge-grabbing, ledge-missing (oops), and of course the inevitable red-blotch-among-the-spikes-regarding. You'll be doing a lot of this last one in Prince of Persia 2.

Not to mention some head-scratching. Puzzles of timing and distance were built into the very structure of Prince of Persia, but puzzles for puzzles' sake seem to be more conspicuous here. For instance, it's quite possible to ostensibly complete a segment but then be utterly bewildered as to how to progress into the next because you haven't mastered a given mechanism or trick.

That said, there's a real sense of progression here; it's not just a series of caves with attitude. The action picks up from the moment the prince leaps through the palace window. It follows him across rooftops and as he dives for the stern of a departing ship, on a long trek through caves (familiar terrain from the original game), and on into a ruined palace—a place of disembodied heads that scream when they spot you.

The lifelike animation in Prince of Persia grabbed everyone's attention. Prince of Persia 2 is as realistic as ever (though maybe just a touch less fluid, perhaps on account of the complexity of the sumptuous VGA graphics), and not simply when the character is pulling himself up a ledge or long jumping. Realistic animation comes into play even as the prince plummets to his doom or raises a fiery, blackened hand from his lava tomb.

But while graphic enough to be nasty fun, those death scenes are never really grisly. Prince of Persia 2 has an exquisite sense of balance and proportion and never goes overboard. There's honestly not much in Prince of Persia 2 I'd change, save the shrieks the prince lets loose when he falls too far. (Die like a hero, you bozo.) This is not simply a worthy sequel but also a wonderful adventure in its own right. The old Prince of Persia has grown up, and Prince of Persia 2 is a true king.

PETER OLAFSON

Brøderbund
(415) 382-4400
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Circle Reader Service Number 448

FLASHBACK

Action-adventure games just don't get much hotter than Flashback, SSI's dazzling follow-up to last year's breakthrough hit, Out of This World. Far bigger and bolder than its predecessor, the title melds cinematic techniques with traditional puzzle-oriented, platform-style arcade fare.

The story unfolds in the year 2142, cast in the murky off-world tones of a novella by Philip K. Dick (whose

POSITRONIC

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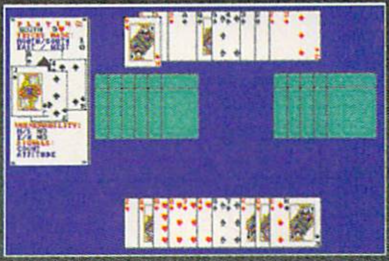
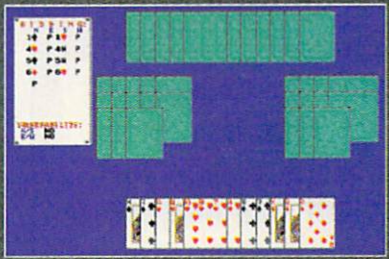
Artificial Intelligence Based



Play Screen



Bidding Screen

Artificial Intelligence now a reality!

The challenge of computer bridge will never be the same with the introduction of Positronic Bridge, the first artificial intelligence based bridge game. Whether you are a beginner or expert, Positronic Bridge with its cutting-edge computing technology automatically improves its skill level as you improve yours, so the game always remains a challenge.

Included free with the program is the best-selling book "The Basics of Winning Bridge" that will have you playing bridge in just one hour. You can then improve your bridge skills using the practice mode and help keys.

Other features include: "No Cheat" gameplay (the computer doesn't look at your cards to make decisions), rubber or duplicate bridge, standard bidding, simple signaling, random deals or preset input, show/hide opponents cards.

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Positronic

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Circle Reader Service Number 163

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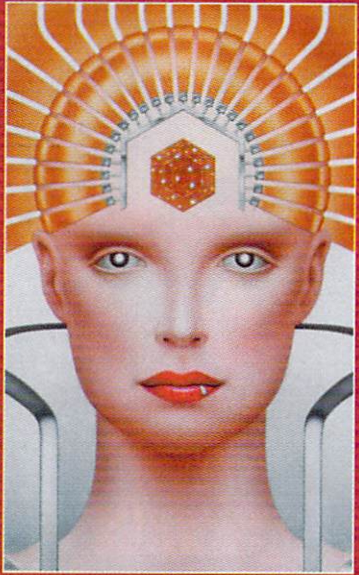

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PH006

work also inspired the films *Blade Runner* and *Total Recall*). You assume the role of Conrad Hart, a scientist who awakes in the synthetic jungles of Titan, Saturn's newly colonized moon. Robbed of your long-term memory and equipped with only a pistol, a Holocube, and the instinct for survival, you embark on a violent, wildly convoluted quest to regain your identity. The entire game boasts more than 200 screens, divided among six levels, for a total of 50 to 100 hours of realtime action. It's a demanding assignment that only the hardiest arcade gamers will survive.

The game's standout feature is undoubtedly its lifelike character animation, rotoscoped at a fluid, film-quality rate of 24 frames per second. This phenomenal technique, similar to that used in Jordan Mechner's Prince of Persia series, helps break the action free of its two-dimensional boundaries. It's so remarkable, in fact, that you might spend your first few sessions simply admiring the lead character's extraordinary range of physical movement: running, leaping, falling, tumbling, shooting, and other motions, both subtle and exaggerated.

Scattered throughout the game are more than 75 cinematic segues and noninteractive plot enhancements, designed to pull you into the dark, serpentine story line. The game successfully retains the free-form nature of its arcade roots, fashioned along a linear, sequentially structured series of challenges. In Titan's domed city of New Washington, for example, you must obtain a work permit and complete a series of progressively dangerous jobs, earning money for a trip back to Earth. Other highlights include a guest appearance on the lethal TV game show "Death Tower," a capture by mutant aliens, and an absolutely riveting final showdown with a superhuman power. Pass codes allow you to restart your adventure at the beginning of the last level reached.

Nice touches abound, like the explosive report and subtle recoil of your trusty revolver and the incredibly detailed spot animation that enlivens almost every scene. Controls are streamlined and highly responsive, whether you use the keyboard or joystick. The game has excellent support for the four-button Gravis PC GamePad. Three skill levels—increasing both the number and tenacity of your opponents—help keep the challenge fresh and the replay value high.

One of several recent technology milestones in PC arcade entertainment, SSI's Flashback invites and deserves enthusiastic praise.

SCOTT A. MAY

Strategic Simulations
Distributed by Electronic Arts
(800) 245-4525
$49.95

Circle Reader Service Number 449

LIGHTNING CD

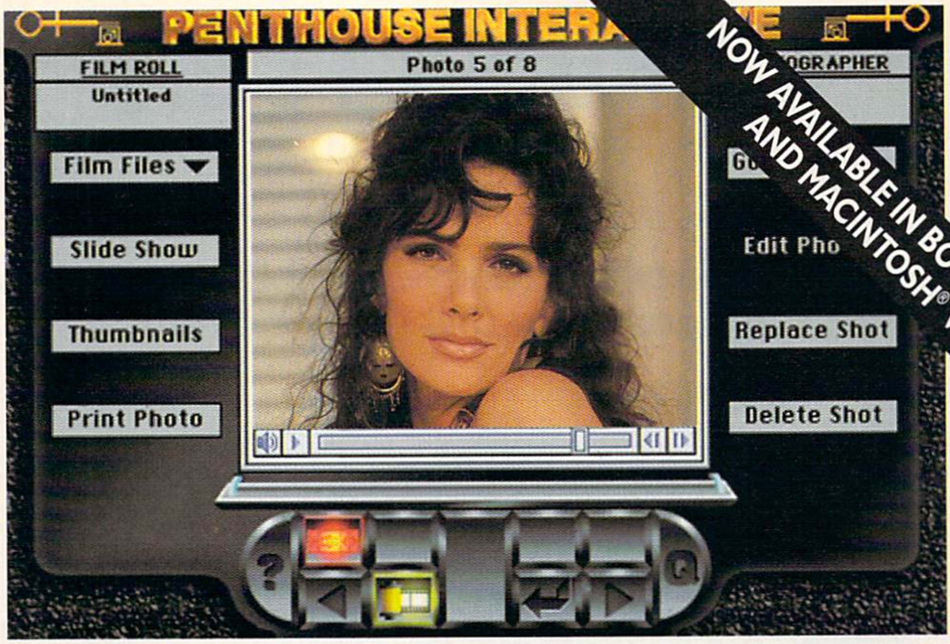
Newcomers to the world of multimedia computing expect to be dazzled, and few are disappointed. Experienced users, however, know not to expect miracles from a CD-ROM drive. Although one of the most cost-effective means of data retrieval, with drives starting as low as $150 and discs capable of holding up to 650MB of information, CD-ROM drives are no speed demons. Even top-of-the-line CD-ROM drives find and transfer data at a speed about 15 times slower than the average hard drive.

Before you get discouraged, take a look at Lucid Corporation's excellent Lightning CD, a data-caching utility designed specifically for CD-ROM drives. The company claims speed increases of more than 1000 percent in best-case scenarios. Realistically, you can expect an average, consistent speed increase of 20-50 times. For many DOS and Windows/MPC applications, those little numbers can make a huge difference in the performance of your programs.

How does it work? Like all disk caches, Lightning CD analyzes and stores frequently used information in RAM. When a program asks for data from hard disk or CD, the computer first looks to its memory cache, and if the data is there it rockets this information to the CPU in a fraction of the normal access time. Caching won't eliminate disc access, but can substantially decrease drive activity. In the data-intensive world of CD-ROM, your computer needs all the help it can get.

Unlike some CD-caching products which store recently accessed data on your hard drive, Lightning CD caches directly from RAM. Of course, the more RAM you have, the more information you can store, which determines the overall effectiveness of the cache. If you can't afford at least a 2MB RAM cache—culled from either expanded or extended memory—you won't utilize the program's full power.

A cache works only with frequently repeated disk activities. Although Lucid clearly markets the product at multimedia game players, the linear structure of most CD-based games—such as role-playing or adventures—means the



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Macintosh® Requirements: Any Macintosh® computer with an 8 bit (or better) color or grayscale display. A minimum of 5 megabytes of RAM running system 6.0.7 or 8 megabytes of RAM running system 7.0 or higher. A CD-ROM drive. A double-speed (300 KByte) drive is preferred. Apple system software 6.0.7 or higher. QuickTime 1.6 and HyperCard 2.1 are included in your PHI CD-ROM.

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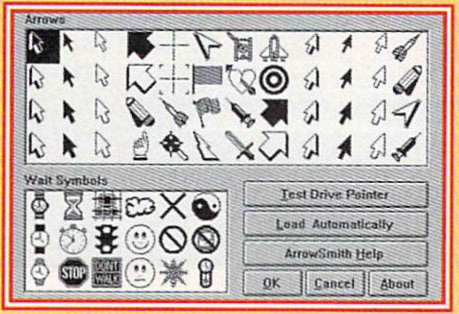

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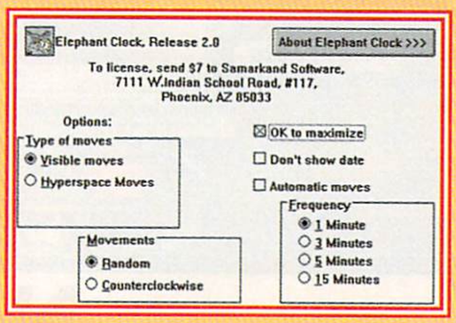

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Options:

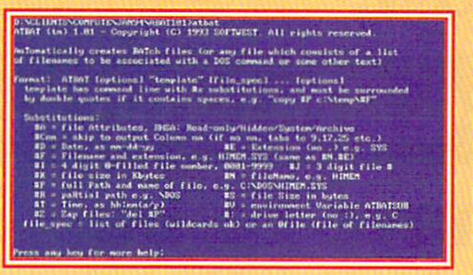
Type of moves
● Visible moves
○ Hyperspace Moves

Movements
● Random
○ Counterclockwise

☒ OK to maximize
☐ Don't show date
☐ Automatic moves

Frequency
● 1 Minute
○ 3 Minutes
○ 5 Minutes
○ 15 Minutes

ATBAT
ATBAT builds batch files that execute a repetitive command against a list of filenames.



```
D:\CLIENTS\COMPUTE\JAN94\ATBAT101>atbat
ATBAT (tm) 1.01 - Copyright (C) 1993 SOFTWEST. All rights reserved.

AuTomatically creates BATch files (or any file which consists of a list
of filenames to be associated with a DOS command or some other text)

Format:  ATBAT [options] "template" [file_spec] ... [options]
  template has command line with #x substitutions, and must be surrounded
  by double quotes if it contains spaces, e.g. "copy #P c:\temp\#F"

  Substitutions:
    #A = file Attributes, RHSA: Read-only/Hidden/System/Archive
    #Cnn = skip to output Column nn (if no nn, tabs to 9,17,25 etc.)
    #D = Date, as mm-dd-yy              #E = Extension (no .) e.g. SYS
    #F = Filename and extension, e.g. HIMEM.SYS (same as #N.#E)
    #I = 4 digit 0-filled file number, 0001-9999   #J = 3 digit file #
    #K = file size in Kbytes            #N = fileName, e.g. HIMEM
    #P = full Path and name of file, e.g. C:\DOS\HIMEM.SYS
    #R = paRtial path e.g. \DOS         #S = file Size in bytes
    #T = Time, as hh:mm(a/p)            #V = environment Variable ATBATSUB
    #Z = Zap files: "del #P"            #: = drive letter (no :), e.g. C
  file_spec = list of files (wildcards ok) or an @file (file of filenames)

Press any key for more help:
```

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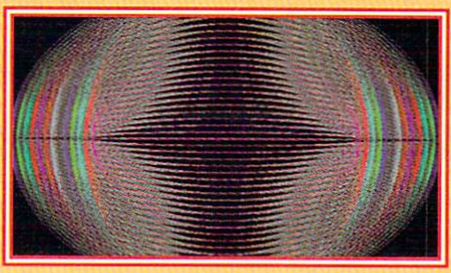

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cache will be constantly flushed with new information, and therefore offer little benefit. Folks who use CD-based encyclopedias and other reference works, Photo-CD discs, and clip-art discs will see a more dramatic speedup than gamers. A game might seem a little snappier, but an encylopedia search may go from 10 seconds to less than a second on subsequent accesses.

The manual does a good job of explaining the program's many command line parameters and configuration nuances. Besides speeding CDs, the program can also cache hard disks and floppy drives. Available options include a handy write-delay feature, memory lending, performance reports, write protection, and the ability to read ahead a user-defined number of sectors. This last feature is particularly useful for full-motion video.

The program performs flawlessly under both DOS and Windows, but doesn't support OS/2. The biggest problem most veteran users will encounter is simply finding room in the system configuration for another TSR. If your system has room, you can load the program entirely into upper memory.

No disk-caching program will magically transform a slow CD-ROM drive into a speed demon, nor will it perform similar miracles on slow video cards and ancient CPUs. For those with reasonable expectations, however, Lightning CD offers immediate rewards.

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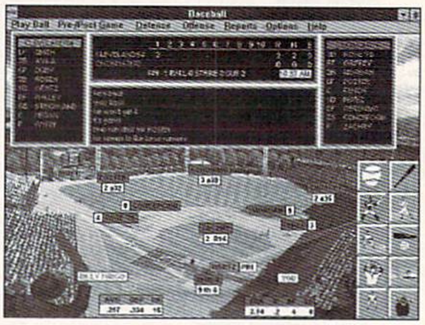
BASEBALL FOR WINDOWS

Don't be alarmed: The sound of breaking glass you hear is merely another barrier broken in the field of Windows-based entertainment software. Miller Associates' Baseball for Windows, improved from the best-selling DOS version, is stunning in its scope and quality of presentation, setting a new standard for strategy sports games.

The program incorporates four distinct modules: Baseball (the game itself), Advanced Draft, League Manager, and StatMaster. The action is purely statistical yet still manages to stir considerable excitement with optional real-time play management and press-box play-by-play. Adding to the overall ambiance are several handsomely rendered 16- or 256-color ballpark background graphics.

Managerial, coaching, and statistical reporting features are overwhelming and simply too numerous to mention. Suffice it to say that every aspect of professional baseball, no matter how large or small, is here—from spring training to postseason. The program comes with three Old Timer team collections and is compatible with more than 50 season disks available by the publisher.



This game proves Windows is good for more than puzzle and card games.

Multitasking allows you to play two games simultaneously or manage league affairs while a game plays in the background. The computing price is a bit steep, requiring at least 3MB RAM and a fast CPU (a 386 running at 20 MHz is the bare minimum; a 486 is great). It's power well spent, however—for hardcore baseball fans, it doesn't get any better than this.

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If you're interested in starting a family or if you're expecting a child in the near future, you might find B.A.B.Y.: Birth and Baby Years to be a fun and informative way to pass the time before the birth of your baby and after your child is born.

The program starts with information on fertility and conception, analyzing your menstrual schedule to determine and graph peak days of fertility. Once you've found out you're pregnant, it's simple to get to the Timetable box and type in the date of your last menstruation. Instantly, the program calculates the dates for the beginning of each of the three trimesters, tells you how many days into the pregnancy you are and how many days are left and gives you your due date.

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you'll be able to take a week-by-week look at your baby's development. You can view animated displays of the changes your body will go through, and you can read in detail how your baby is developing, how much it probably weighs, and how large it is in inches.

B.A.B.Y. also covers diet, exercise, and childbirth classes. For instance, under the Pregnancy Menu, the Tracker option graphs your weight gain/loss for you. Simply type in your weight each week. The software calculates what your caloric intake should be based on your prepregnancy weight. Then B.A.B.Y. gives diagrams of good prenatal exercises and provides a calendar to keep track of your childbirth classes.

As your due date approaches, you'll want to check out the phases of labor and the animated delivery sequence. You'll learn what you might experience in recovery and what tests your newborn will undergo and what the results mean.

Most expectant parents will find the views of the baby's stages of development fascinating. Some features are more useful that others, however. Discovering your baby's due date is exciting and fun, but attempting to schedule your newborn's feeding times (is there such a thing?) may be impossible. B.A.B.Y.: Birth and Baby Years is a fun and informative way to track fertility and pregnancy, even if you're too busy after the baby is born to take advantage of its other features.

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ICON MAKE-IT

Thanks to the efforts of third-party software makers, the Windows environment is slowly loosening up and having fun. Moon Valley Software's Icon Make-It is a perfect example. The program puts you in the director's chair of a full-featured icon animation studio.

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Moon Valley's Icon Make-It puts you in the director's chair of a full-featured Windows icon animation studio.

Like a mini movie studio, the program is divided into several modules, each specializing in various stages of production. Visit the icon editor to design your own 16-color creations on a 32- × 32-pixel grid, or import 1 of the 200 icons from the built-in clip art book. You can create or modify icons with a full set of standard drawing tools plus effects such as image shifting, borders, and frame advance. You can also create animated cursors, but I found them to be more annoying than entertaining.

The editor interfaces directly with the animation studio, where you script your movies with up to 20 icon frames using VCR-style controls, variable-speed playback, and a preview screen. Choose from 19 special visual effects such as zoom, dissolve, shatter, melt, colorize, rotate, mirror, and paint. Still want more? Try combining two movies—one in the foreground and another in the background—for a complex, multilayered effect.

Once assembled and recorded, animated icons are easily assigned to programs via a scaled-down version of Moon Valley's Icon Hear-It, which allows you to attach sound samples to your icons. Also included is a handy working demo of MCS Stereo Digital Recorder, a component-style Windows WAV sound recorder, player, and editor from Animotion Development.

Icon Make-It's greatest limitation is its incompatibility with shells other than Windows' Program Manager. It has limited success with Norton Desktop—animated icons must be reloaded with each new Windows session—and it doesn't work at all with such proprietary shells as Vitesse's Salvation. These are problems Moon Valley should quickly address, since alternative Windows shells are becoming more popular.

While it may not improve your productivity, Icon Make-It is undeniably fun to play with and adds some needed motion to a static Windows workplace.

SCOTT A. MAY

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Circle Reader Service Number 453

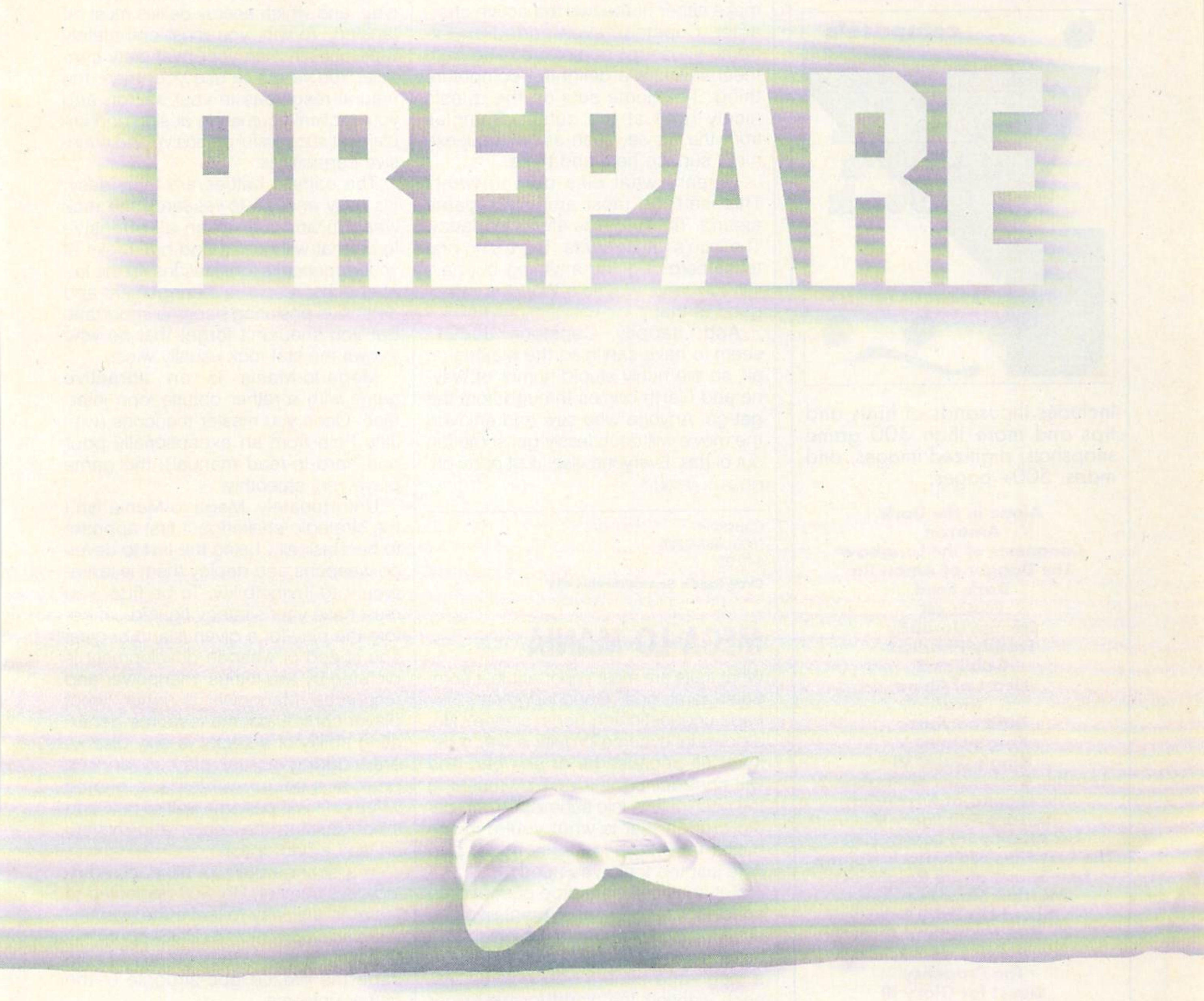
WAYNE'S WORLD

Wayne's World is excellent! NOT!

Then again, it didn't make me want to blow chunks, either.

This graphic adventure from Capstone uses an updated version of the game system used in the company's The Dark Half. It finds Wayne and Garth setting up a pizzathon to raise $50,000 to prevent the Community Access Television station which airs their Mom's-basement talk show from going off the air.

No way! As if anything built on the same engine as The Dark Half could be good, dude. Way! Wayne's World really is not all that bad. You can switch between these two dubious cultural icons. The interface now has a series of icons fea-



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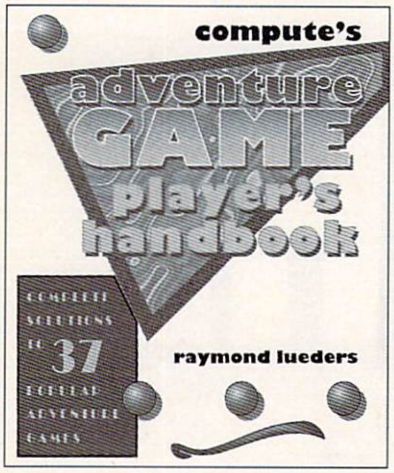
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turing their goofy faces. You can make either of the two the active character. Capstone even added an Extreme Closeup! command. The map mechanism is a delightful computery thing. The game sets up the quests nicely right at the outset. Samples from the movie, such as "ex-squeeze me?" surface here and there.

I mean, what else do you want? This isn't the most ambitious game around. The graphics aren't too fancy. The intro's rather crude. There's no pretense here of doing anything but having fun, and Wayne's World is rather good at that.

And, happily, Capstone doesn't seem to have sanitized the material at all, so the richly stupid humor of Wayne and Garth comes through from the get-go. Anyone who saw and enjoyed the movie will doubtlessly get some fun out of this. Everyone else: Just party on.

PETER OLAFSON

Capstone
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Circle Reader Service Number 454

MEGA-LO-MANIA

What traits are most important in a computer-game god? Good judgment? Perhaps unquestioning benevolence? No, a powerful cybernetic deity is only a deity at all because he or she can and will conquer unbelievers by mashing the poor pawns into submission. If a deific crunch-fest is what you're in the mood for, Mega-lo-Mania might provide just the tonic you need.

Set against a backdrop of sweeping space, a young planet is born, populated with primitive human life which is in serious need of some guidance. Enter a rough-and-tumble bunch of deities, each wanting the world for his or her own. So how is the decision made? By war of course, using the malleable and gullible humans as pawns.

You start the game by choosing one of four rival deities, and you must battle through 27 islands of conflict, until the 28th, the "mother of battles" is reached. If you emerge victorious, you're given dominion over the planet.

The islands are played in sets of three, with each set representing an epoch of time. You start play in the Stone Age and end with nuclear and spaceflight technology. For each battle you're allocated a pool of men from the bank, 100 per epoch (but more may be accumulated by underpopulating the lower level conflicts and bringing the balance forward). Choose a home sector, and you're ready to go off to fight some battles.

Each island varies in size, terrain type, and which enemy deities must be tackled. To win, you must completely wipe out the men your rival diety controls. You've got to use your men, the natural resources in your sector, and your tactical acumen to design and implement successful defensive and offensive capabilities.

The earliest battles are fairly easy: It's easy enough to research the rock weapon and set up an all-offensive force that will go out and hurl rocks at your opponent's fortifications. In the later epochs, resource management and defensive posturing become important. But you shouldn't forget that he who throws the first rock usually wins.

Mega-lo-Mania is an attractive game with a rather obtuse icon interface. Once you master the icons (with little help from an exceptionally poor and hard-to-read manual), the game plays very smoothly.

Unfortunately, Mega-lo-Mania isn't the strategic challenge it first appears to be. Basically, being the first to develop weapons and deploy them is tantamount to invincibility. To be first, you must have your strategy figured out before the play for a given island begins. The speed of weapon development is dictated by two things: manpower and resources. Manpower is under direct player control, but the resource-generating ability of a sector is only discovered during actual play. A dry-run peek at a sector will tell at a glance whether it will perform well or not, and if not, quitting the sector and moving on isn't a bad option.

In a strange quirk of blindness during development, Ubi Soft neglected to factor in any way to leave the game—you can't quit back to DOS! Your only option is to reboot the computer to escape the crazed god-struggle of the nether universe.

While Mega-lo-Mania suffers from a lack of depth and sloppy quality control, the game does offer an interesting gaming experience. Perhaps my favorite aspect of the game is the varying tech levels which can be present at any one time: You can make a biplane attack on a castle defended with archers, and you may be forced to use catapults to fend off an incoming jet fighter. As a nonbenevolent, no-brainer game, Mega-lo-Mania delivers.

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DAUPHIN DTR-1

The Dauphin DTR-1 (Desktop Replacement-1) is about 50 percent PDA and 50 percent laptop. It comes with Pen Windows and the Ascend personal information manager built in, along with a special spreadsheet optimized for pen use and a group of demonstration programs to show how the system could make itself indispensable for a doctor, nurse, or public safety officer.

The system boasts a 25-MHz 486SLC CPU, 4MB of RAM (expandable to 6MB), and a 40MB hard disk (expanded by DoubleSpace to 73MB). The 5- × 9-inch case sports a pen-sensitive backlit passive-matrix monochrome VGA display (640 × 480), a video output port (800 × 600 with 256-color Super VGA), parallel and serial ports, and a Hayes-compatible modem (the modem and serial port are set to the same interrupt, so they can't be used simultaneously). There's also an Ethernet connector, but while the connector is standard, the Ethernet hardware is not—it's an option that you have to order separately for around $300. The keyboard is in a separate, similar-sized unit (5½ × 9½ inches).

Since the reviewed computer had no floppy drive (an external floppy drive is available from Dauphin for $199, and external hard disks and removable hard disks will probably be available by the time this appears) nor any PCMCIA slots, all programming and documents must be managed through the modem or through Interlnk. The machine can be operated without the keyboard through the use of a special pen, which also serves as a mouse in Windows. Provided applications are set up to make sense of pen input, though my pen input was translated into a Doonesburian gobbledygook that was at first amusing, then troublesome, and finally infuriating. Did I once say that I would carry a pen-based computer someday? Is it too late to eat my words?

Pen input can be made simpler through an onscreen keyboard, but using this keyboard requires phenomenal control because, on the tiny screen, each key is about an eighth of an inch square. So to write this review, I relied on the regular keyboard. Finding it difficult to type on the keyboard because of its size, and wanting to be fair, I asked my wife to give it a try because her hands are about half the size of mine. "Too small," she agreed. Not only that, but it feels funny. The keys are stiff and insensitive, so unless you really press, driving the keys all the way down, your typing doesn't register.

Even more troublesome than the keyboard is the unit's tendency to crash. It locked up on me three times while I had it, each time when I was using the pen as a mouse in Windows. This might be a software problem with Pen Windows. I wasn't able to figure out what was causing the crashes.

The unit folds up neatly in a zippered plastic case. One might think that having the screen and keyboard separate would be a good idea, but it isn't. The screen flops all over the place, making it difficult to hold on your lap. Even on a desktop, I had to prop the screen up against something and pull the keyboard completely out of the case to type (the zipper gets between you and the space bar). A sort of stand is built into the screen half of the case, so you can prop the screen up if the unit is sitting on a flat, rigid surface. The keyboard is held in its half of the case by Velcro.

The power supply is about the size of an electric shaver, and it's very light—it doesn't get in the way or weigh you down like a lot of external power supplies. The unit will run for two continuous hours on a battery charge without the keyboard attached. If the keyboard is attached, it will run for an hour and a half. A beeper warns you when you're down to about five minutes of battery power.

The stated purpose of the DTR-1 is to replace a deskful of documents and notebooks. It's enough computer to do that, and it represents the state of the art of pen-based computing, but it needs a better keyboard and a way to physically attach the keyboard to the computer. The pen input needs to get smarter before I can see replacing anything with this computer.

ROBERT BIXBY

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WACKY FUNSTERS

What could be more fun than an irreverent send-up of five and a half arcade favorites? The real things, to be perfectly honest. Tsunami's self-described "geekwad's guide to gaming" offers a campy collection of minigames, spoofing such standards as Asteroids, Pong, and Street Fighter. Unfortunately, the designers forgot the first rule of parody: Be as good as the subject you're ridiculing. These caricatures simply can't muster the addictive quality of the original games they're based on.

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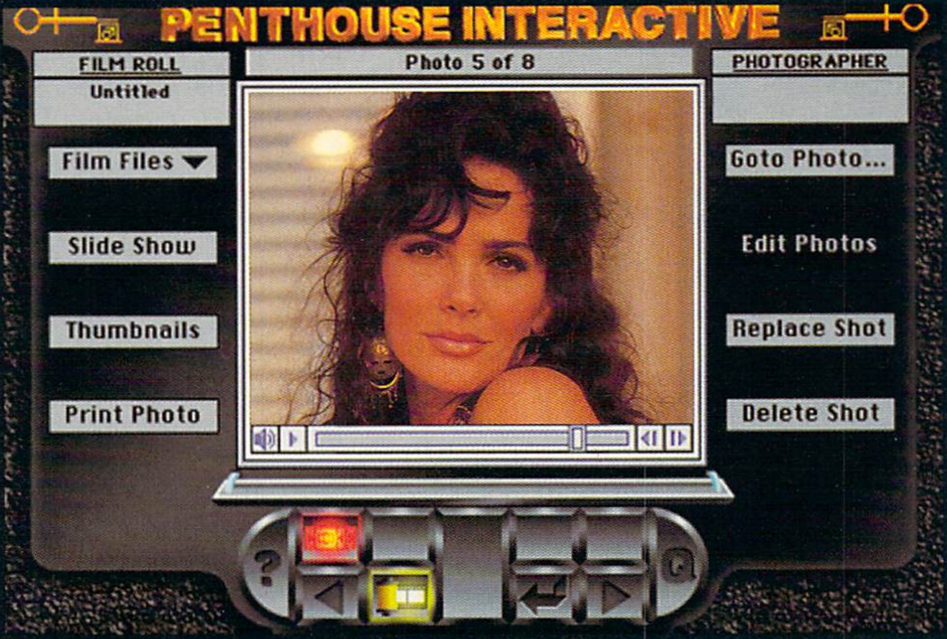

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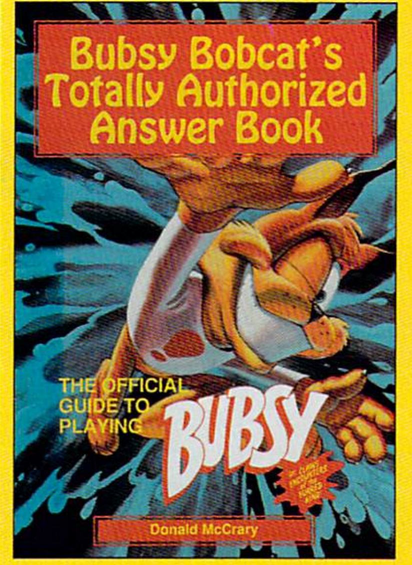
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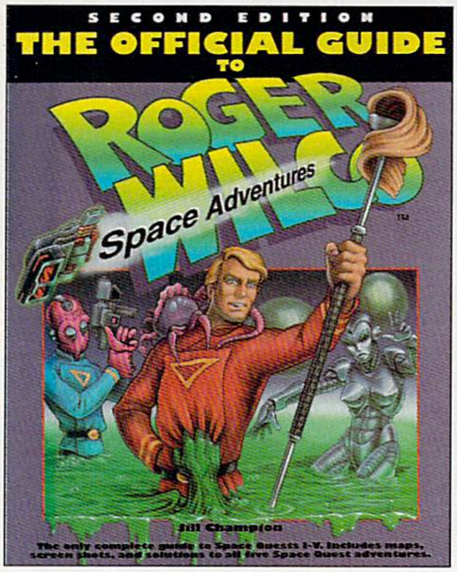
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The biggest problem is the games being lampooned—most are far too old and rudimentary to interest today's audiences. Add to this below-par graphics, crude animation, and action that stresses gag content over gameplay. The program's most inspired moments, including a hilarious satire on software copy protection, actually have little to do with the games. The CD-ROM version also features more than 26 minutes of music and comedy sketches.

Clever in concept, Wacky Funsters takes broad aim at its intended targets but completely misses the mark.

SCOTT A. MAY

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BLOODSTONE: AN EPIC DWARVEN TALE

Role-playing adventures are a dime a dozen these days. (They may even be down to a nickel.) So what distinguishes Mindcraft's Bloodstone: An Epic Dwarven Tale from the scores of RPGs crowding software shelves? Unfortunately, very little.

Following an annoyingly slow installation process, Bloodstone rewards with fluid, easy-to-learn, mouse-driven gameplay. But an efficient, Ultima-like overhead view of the characters is marred by the game's seemingly low-resolution graphics; the terrain is crisp but the characters themselves appear as small, indistinguishable color blobs.

Still, Bloodstone is not without its positives. Sound effects are sparse but superb, and the game engine features a diverse collection of magical objects and spells. Most importantly, combat is challenging and lots of fun; it'll take more than a little hacking and slashing to see your party through a monster ambush. Fortunately, Bloodstone does include the obligatory save-game feature so you can try, try again.

RPG die-hards will enjoy Bloodstone's expansive landscape and exciting melees, but overall this well-done game has little to make it stand out from a crowded pack.

RICK BROIDA

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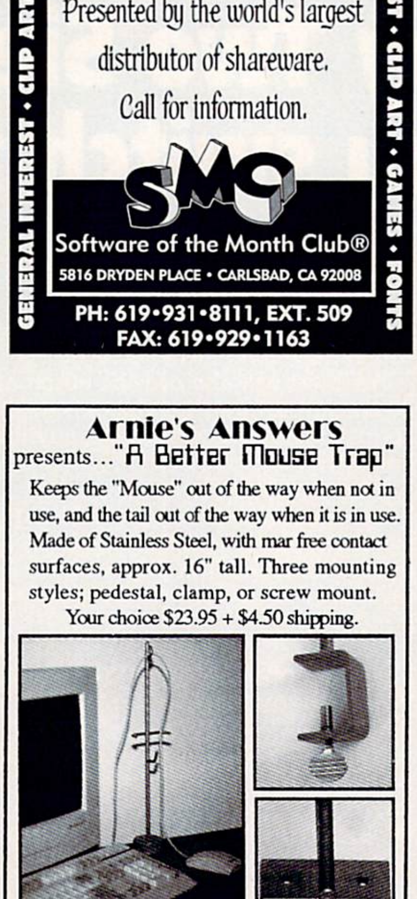

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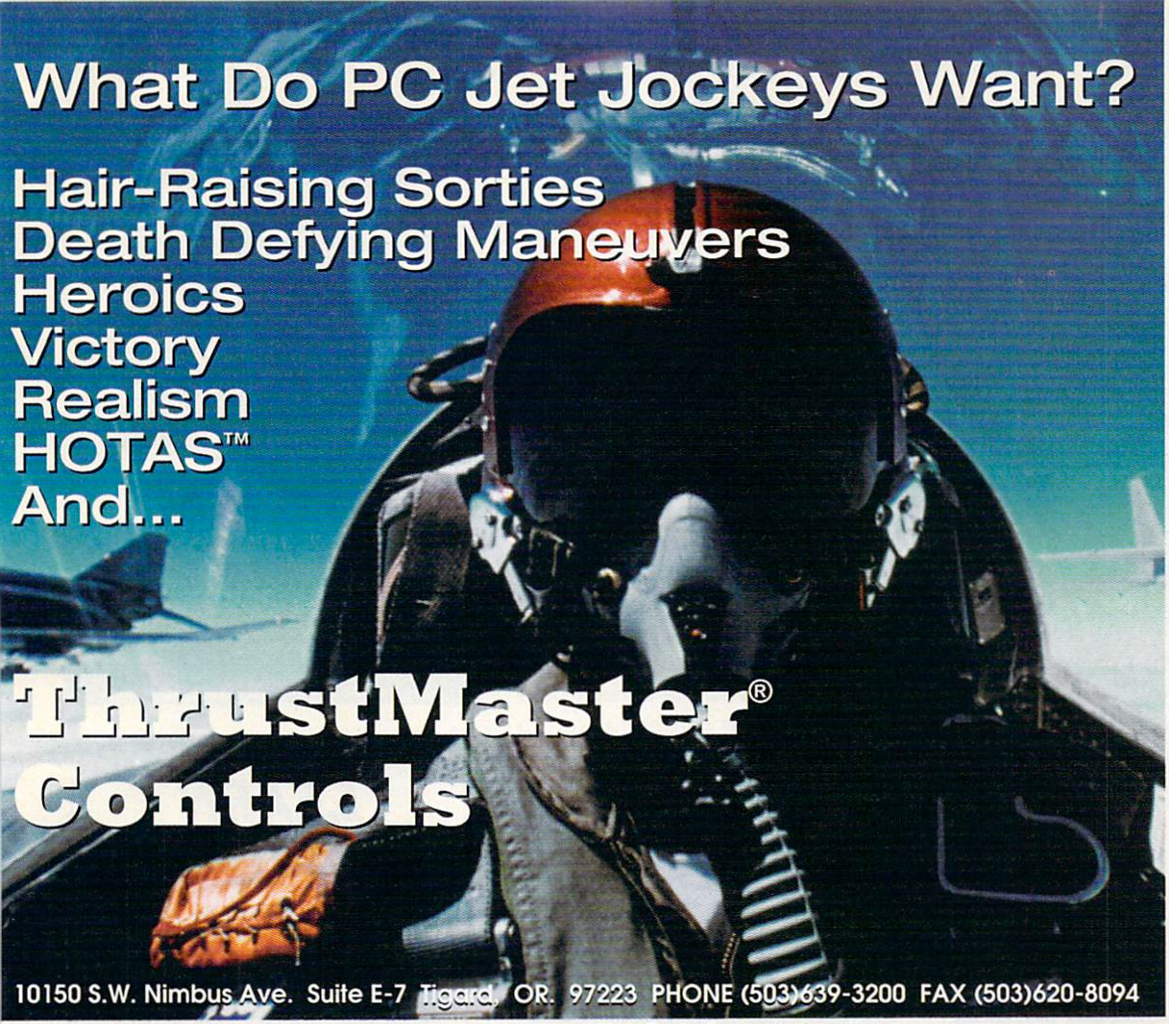
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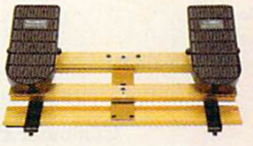

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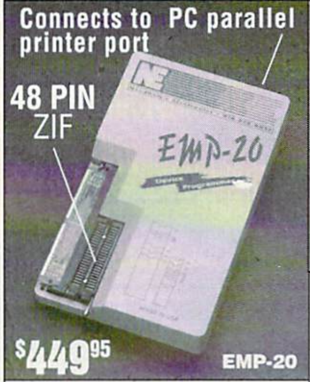
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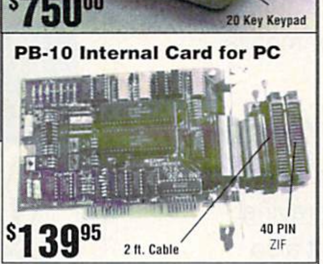
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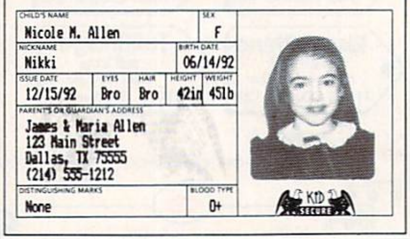

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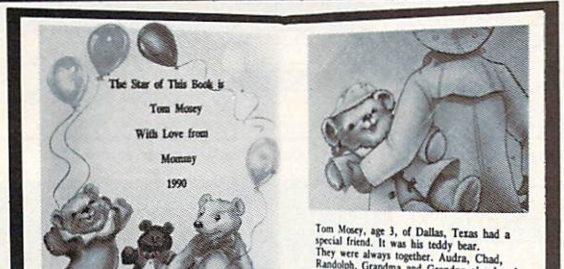

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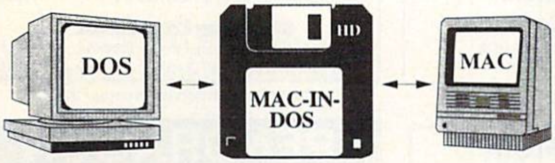

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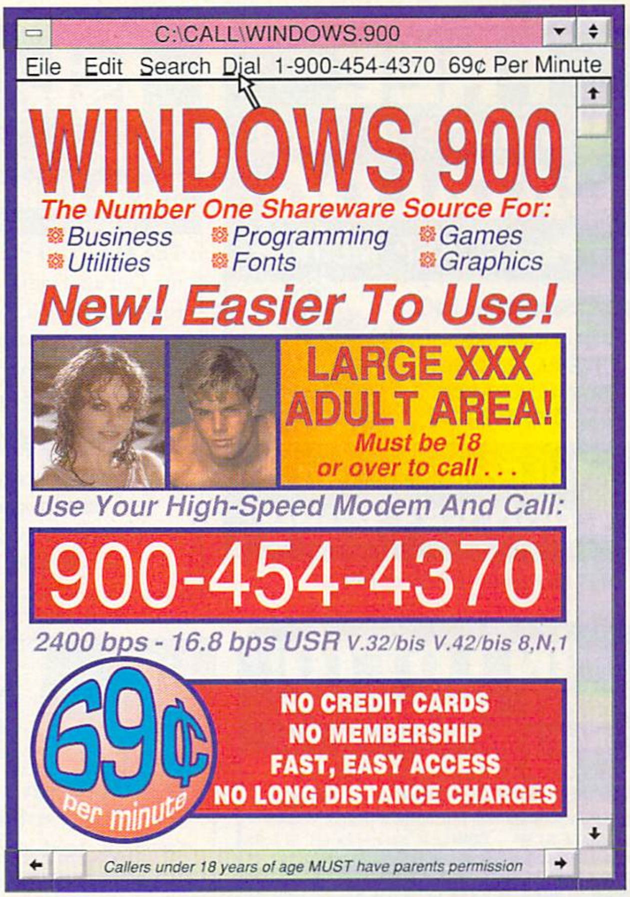
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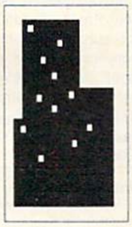

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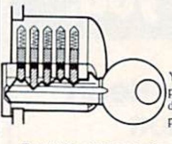

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NEWS BITS

Jill Champion Booth

A shortage of parts, a distaff online service, E-mail to the chief, and more

Don't Hold Your Breath

President Clinton says he hopes to be able to answer electronic mail messages individually within a year—this in response to a new exhibit, Letter to the White House, at the Computer Museum of Boston. Visitors can access President Clinton and Vice President Gore electronically to tell them what they think about, well, everything. The exhibit also allows you to see how your message is routed through the Internet's web of machines. Computer animation and other special effects display a simulated satellite view of the message as it bounces from the museum to a gateway in Boston and then through cyberspace to Washington and the White House. Once your message is received, you get a printout with Clinton's and Gore's E-mail addresses.

Women Get Wired

Women's Information Resource & Exchange (WIRE), the first international, interactive computer network dedicated to women, plans to open its gateways early this year. The network will provide an easily accessed, centralized source of women-oriented information and conversation. Women and men can log on to WIRE and discuss topics of interest with each other, network to solve problems, access information instantly, keep in touch with family and friends via E-mail, and participate in news groups and mailing lists from other systems on the Internet. For more information, contact WIRE at (415) 615-8989 or send E-mail to info@wire.net.

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Nike Reaches an Apex

Nike may have lost some air from its pumps when Michael Jordan, the company's most famous endorser, stepped out of his Air Jordans and off the basketball court for good, but the sportswear company still keeps its sales force moving and the shoes flying with IBM ThinkPad portable computers equipped with Apex Data modems.

What made Nike choose Apex over other fax/data modems? High speed, for one thing, says Ron Edwards, Nike's director of sales operations, but also because the Apex modems are covered under the IBM service guarantee. "We have reps in obscure parts of the country, and we know that any problems with Apex products will be fixed by simply calling IBM's service number." Another plus: The fax/data modems are compatible with the ThinkPad's "hibernate" feature, which allows you to change a battery on the fly. "The fact that Apex modems don't interfere with this is important," says Edwards.

It Could Be a Long Wait

That's the word from one OEM based in Newark, New York, that is also a major supplier of component parts to the PC industry (including Compaq, Dell, IBM, and Tandy). Roger Main, president of IEC Electronics, says consumers who are waiting for prices to drop before they buy the newest technologically advanced PCs might want to think again. He believes that prices of computers will hold steady for a while, not drop, because of a massive shortage of integral computer parts. In other words, newer models using the most advanced technology won't be available to consumers as quickly as usual. What is the reason for the delay? In the past, parts manufacturers rushed to keep up with demand but ended up overstocked with unsalable, out-of-date parts due to fast-paced technology advances. Overseas suppliers refuse to make the same mistake again, he says, and that has resulted in the shortage.

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☐ Other IBM/PC Compatible 5 ☐ Laptop/Notebook 6

B. At home, do you use your computer mostly for ☐ Personal Finance 7 ☐ Work/Home Business 8
☐ Entertainment 9 ☐ All of the Above 10

C. Would you classify yourself as a(n) ☐ Entrepreneur 11 ☐ Telecommuter 12 ☐ Moonlighter 13
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H. Do you regularly purchase hardware/software as a result of ads in COMPUTE? ☐ Yes 33

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K. What is your age? ☐ 18–24 41 ☐ 25–34 42 ☐ 35–49 43 ☐ 50+ 44

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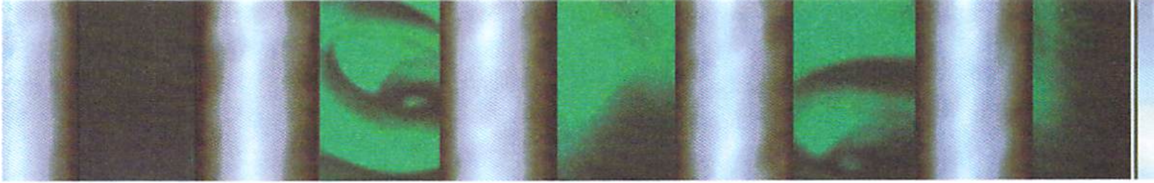

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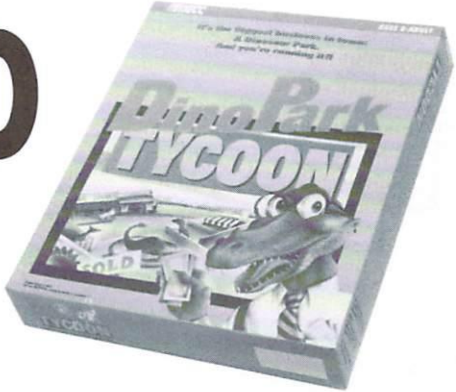

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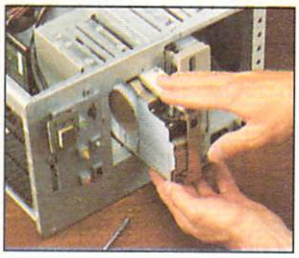

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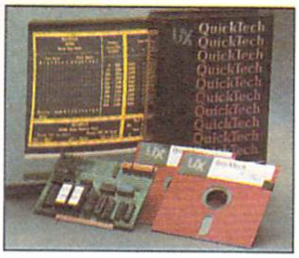

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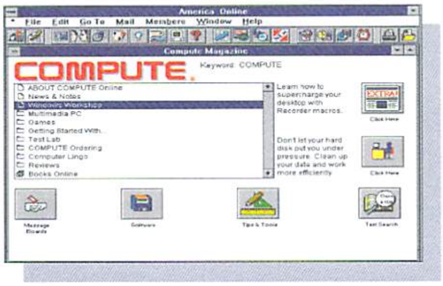
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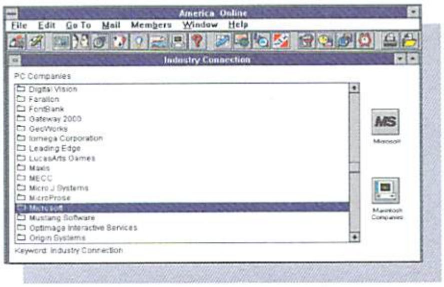
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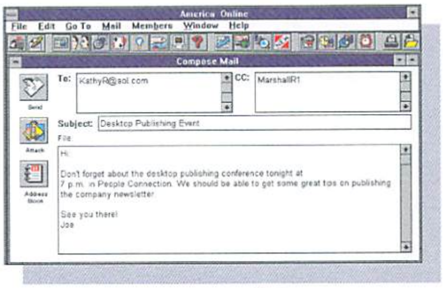
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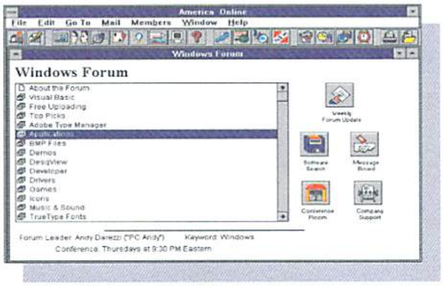
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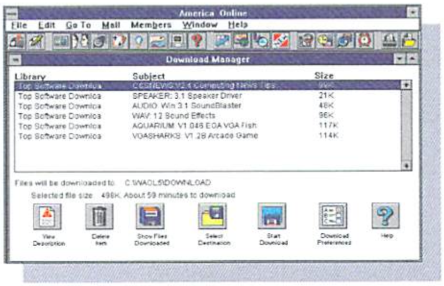
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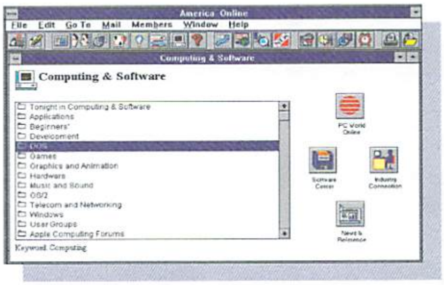
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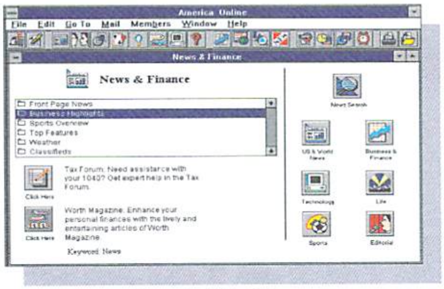
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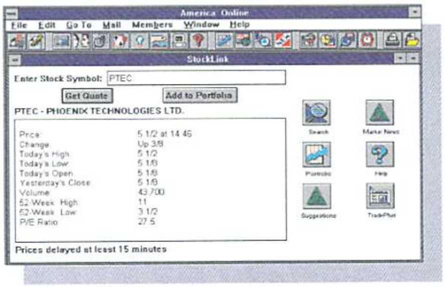
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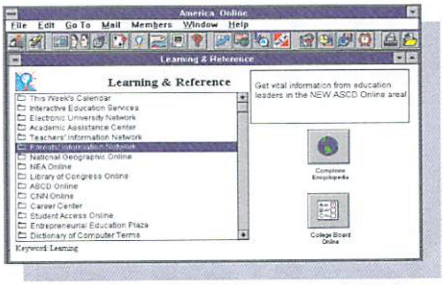
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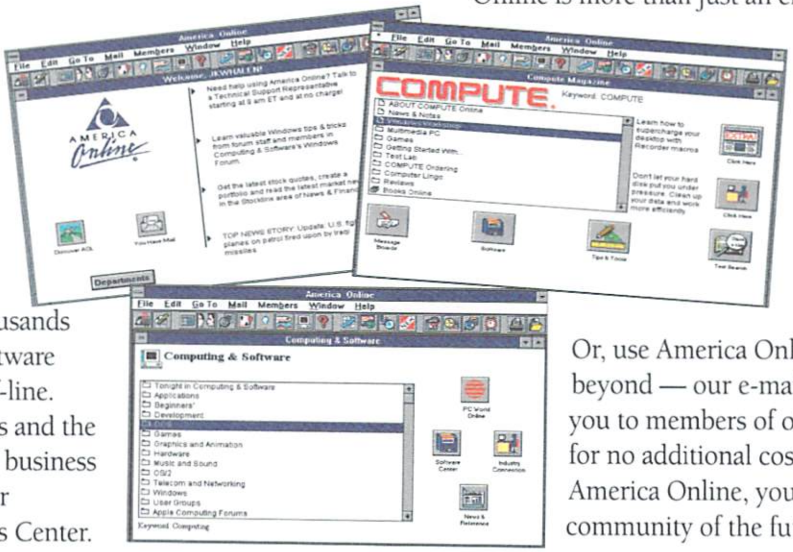
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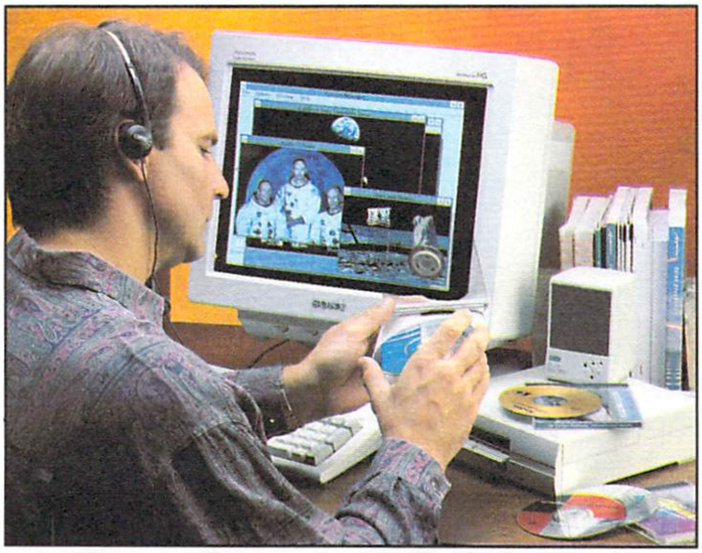
Multimedia. It's cutting edge technology that's being talked about everywhere — in magazines, on TV, even at your office. Perhaps you've used a multimedia application yourself at an airport kiosk or in a retail store. Now you can be a part of this fascinating new technology that's given the PC voice, sound, animation, and even full-motion video!

It's a fact: Multimedia is rapidly changing the way we learn, communicate, get information — even the way we do business. Only NRI gives you exclusive, hands-on training with the latest peripherals that turn your present computer into a "Multimedia PC" and turn you into a Multimedia Specialist. Only NRI prepares you so well to take advantage of the myriad career opportunities opening up in this dynamic new field. Whether you're looking to create programs that educate, inform, entertain, or train, opportunities to move up, make more money, even start your own business are virtually unlimited.

Your NRI training starts with a review of computer hardware. Using your own 386 or higher model computer with 3.5 inch drive and Windows 3.1, you first get hands-on experience evaluating your equipment for a better understanding of how it works. You go on to examine how today's most sought-after peripherals — CD-ROM drive and sound card — work together with multimedia software to give sensory qualities to your PC. What's more, you install, train with, and keep a Mitsumi CD-ROM drive, 16-bit SoundBlaster® Pro II-compatible sound interface card, Autodesk Animator®, and Asymetrix Toolbook® software — all included in your course.



Your Multimedia Training Includes Everything You Need to Create Multimedia Applications With Your Own Computer

See other side for more details →

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YES! I'm interested in learning more about NRI's training in (☑ check one only):

☐ **Multimedia Specialist** ☐ **Database Management**

I understand the above courses require that I have access to or own a 386sx or higher model computer, 3.5-inch drive, and Windows 3.1.

☐ I'm Interested in NRI training in another field that includes computer equipment. Please send me information about (☑ check one only):

☐ Computer Programming
☐ Microcomputer Servicing
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Get in on the ground floor of today's most dynamic computer technology: Multimedia

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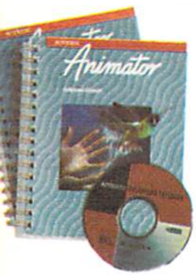

Your very first lesson has you and your computer up and running with a review of the many opportuniutes in the exciting field of Multimedia. But before you begin to design your own program, you first learn about the various types of multimedia applications and CD-ROM titles that have been developed commercially. With a full understanding of the elements that make up a successful multimedia application, you're ready to try your hand at your own multimedia program. Using your own computer and the exclusive worksheets and sample reports included in your hands-on training projects, you prepare an Analysis Report and Preliminary Design Document that lay the foundation for your own multimedia program.

With your NRI instructor available to guide you every step of the way you move on to examine the components that combine to make your multimedia program visually engaging: text, graphics, video, and animation. You install Autodesk Animator software on your computer and then use its paintbrush feature to create objects that move across the screen, rotate, or change perspective, keeping in mind the creative approaches you will use later in your multimedia program.

Now you're ready to go on to explore the elements of multimedia that make it multisensory: audio and video. Your lessons cover the break-through technology of CD-ROM and new digital data storage devices on the horizon. Then you get first-hand experience with the very equipment that enables your computer to speak, play music, and generate a host of sound effects — Mitsumi CD-ROM drive, 16-bit SoundBlaster Pro-II-compatible sound card, speakers, headphone, microphone, and software — all yours to train with and keep.

Your multimedia program takes shape as you learn about interactivity and principles of interface design. You put yourself in the user's shoes: What will make your program exciting so that people will want to use it? What will your interface buttons look like? How will they work? Refer back to your Preliminary Design Document, and you'll find many of the answers you need to help you create detailed flowcharts and storyboards of your program design on paper. Then, using the Flowchart software included in your course, you recreate your program design on your own computer.

You're now ready to breathe life into your program using professional quality Asymetrix ToolBook® software included in your next project. With its object-oriented technology, this easy-to-use authoring tool has you quickly entering text, graphics, animation, and CD audio – all provided on the exclusive NRI Multimedia Resources CD – to create a content-rich, high-impact multimedia program, one you can use to sell your services to future clients.

What's more, NRI's unique training also includes lessons that show you how to market your services and manage professional projects. By the time you complete your course, you'll have the technical know-how, business savvy, and total confidence to take advantage of today's opportunities in Multimedia.

Send Today For Your Free Catalog

Send for your free full-color catalog that describes every aspect of NRI's breakthrough training in multimedia. If the card is missing, write to NRI Schools, McGraw-Hill Continuing Education Center, 4401 Connecticut Ave., NW, Washington, DC 20008.

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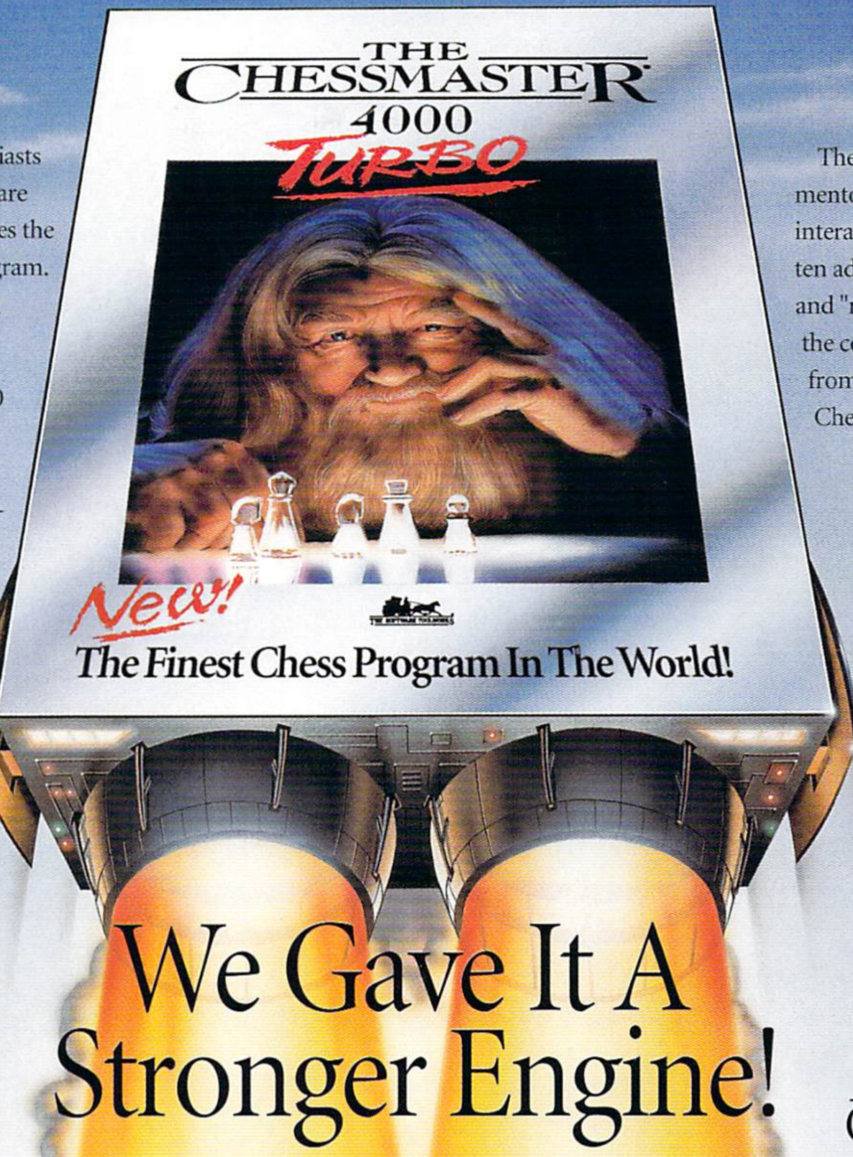

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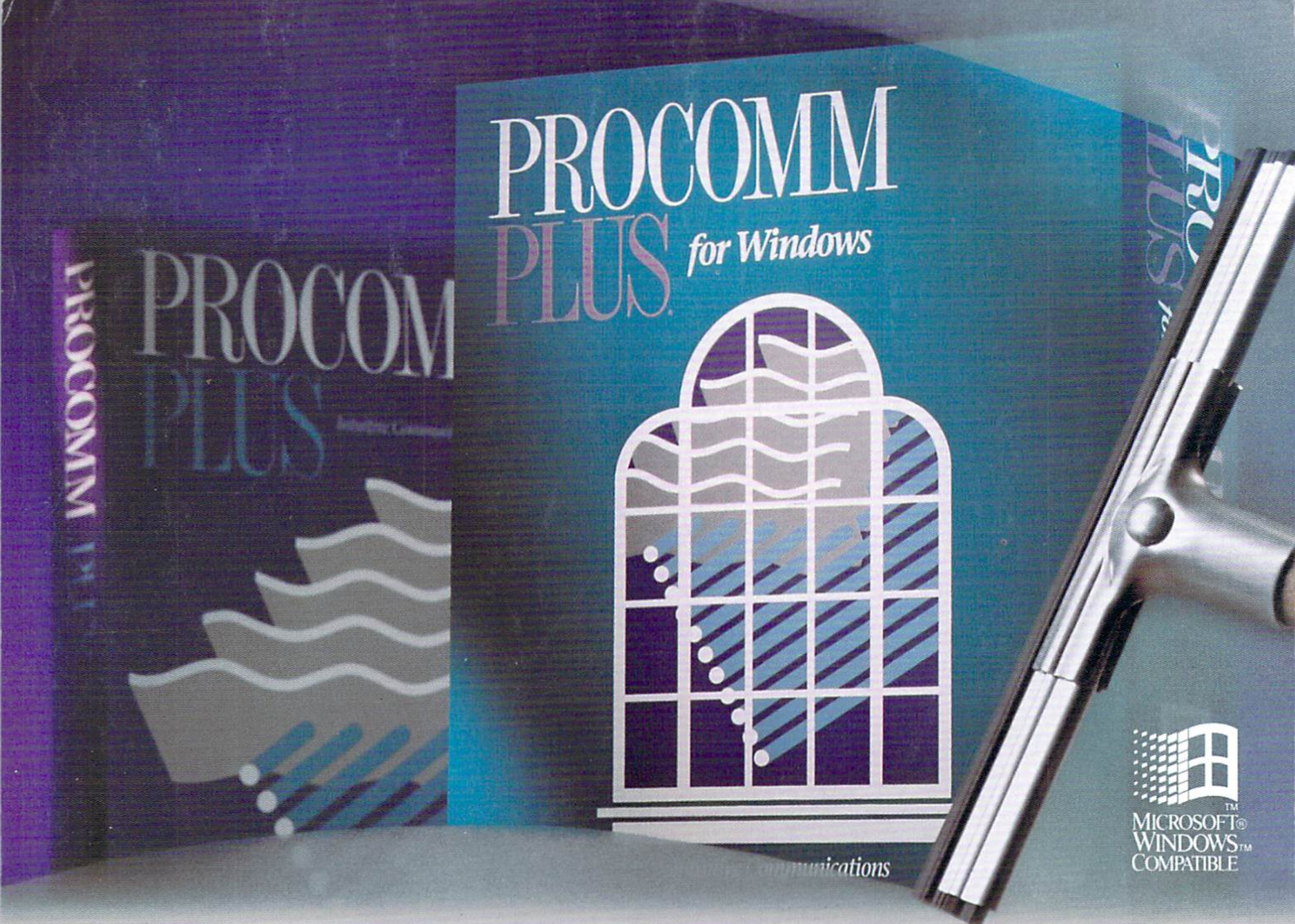
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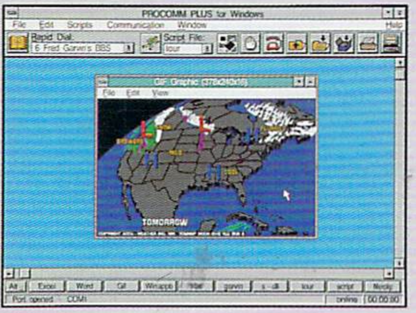
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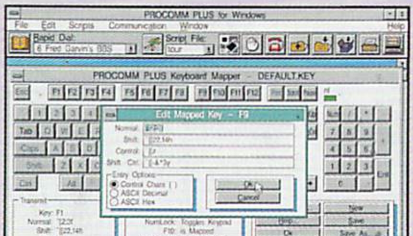
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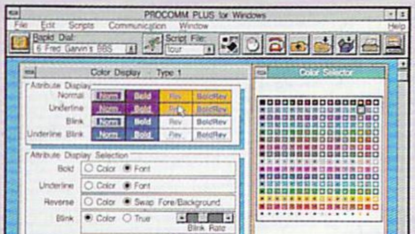
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